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DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

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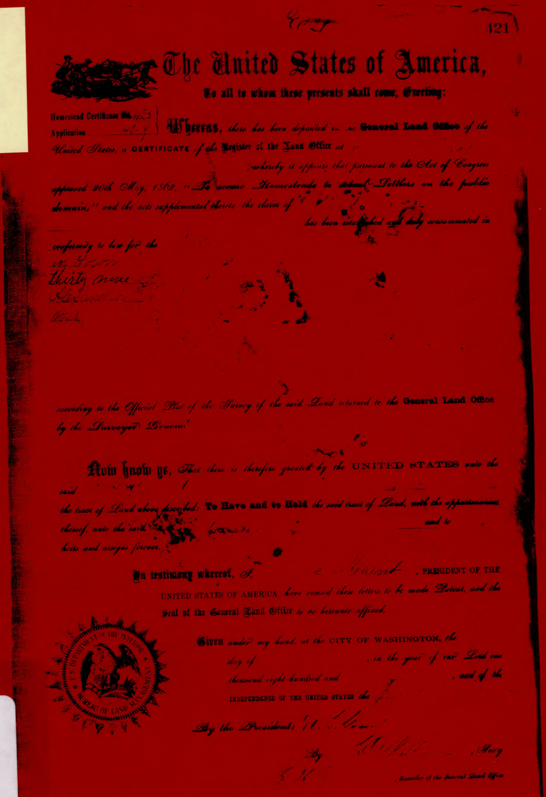

421

The United States of America,

To all to whom these presents shall come, Greeting:

Homestead Certificate No. [illegible]
Application [illegible]

Whereas, *there has been deposited in the* **General Land Office** *of the United States, a* CERTIFICATE *of the* Register of the Land Office *at* , *whereby it appears that pursuant to the Act of Congress approved 20th May, 1862, "To secure Homesteads to actual Settlers on the public domain," and the acts supplemental thereto the claim of* *has been established and duly consummated in conformity to law for the*

thirty nine

according to the Official Plat of the Survey of the said Land returned to the **General Land Office** *by the Surveyor General.*

Now know ye, *That there is therefore granted by the* UNITED STATES *unto the said* *the tract of Land above described:* **To Have and to Hold** *the said tract of Land, with the appurtenances thereof, unto the said* *and to* *heirs and assigns forever.*

In testimony whereof, *I,* Grant, PRESIDENT OF THE UNITED STATES OF AMERICA, *have caused these letters to be made Patent, and the* Seal of the General Land Office *to be hereunto affixed.*

Given *under my hand, at the* CITY OF WASHINGTON, *the* *day of* , *in the year of our Lord one thousand eight hundred and* , *and of the* INDEPENDENCE OF THE UNITED STATES *the*

By the President: U. S. Grant

By , *Sec'y*

, *Recorder of the General Land Office*

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BLM Manual Handbook 1273-1

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Preface

The aftermath of a disaster can be highly traumatic to both the individual and the organization. This document provides detailed direction that will reduce the chaos of such a situation and bring sense and order to make a more successful recovery effort. In order to reduce the severity of a disaster, systematic steps must be taken before, during, and after such an occurrence.

Tested procedures detailed in this handbook reflect the hard lessons learned from actual disaster experiences, from preplanning, stockpiling, and training to the basic instructions that can be used in performing a recovery operation.

If key employees are familiar with the content of this document, the chances of a well meaning but uninformed action causing complete destruction of a recoverable document will be greatly reduced. In the event of a catastrophe, knowing "what to do" and "when to do it" will, in many cases, avert possible legal and financial setbacks to the Bureau, its employees, and the public.

THE COVER

Once any material that is used for record purposes becomes wet, it is vulnerable to attack by mildew, especially if such materials are made from animal or vegetable matter. Proper and timely treatment would have prevented the destruction of the document shown on the cover.

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Chapter I

I. INTRODUCTION.

A. Authorities

The Bureau of Land Management has one of the largest vital records holdings of any Federal agency in the United States. The destruction of any of these records (financial, contractual, cadastral, etc.) would not only affect the Bureau's legal position; irreplaceable historical information would also be lost. Authority for their maintenance, security, recovery, and preservation is provided for in 82 Stat. 1297, 44 USC, Chapter 31; 88 Stat. 143, 42 U.S.C. 5121 (1974 Supplement); Executive Order 10480, August 14, 1953; Executive Order 11490, October 28, 1969; and BLM Manual Section 1170.

B. Disaster Types

There are three types of disaster that are potentially dangerous to any records holding. The first is Acts of God (flood, fire, and wind). The second is Acts of Man (neglect, mishandling, vandalism, accidents, and terrorism). The third and most insidious type is the Creeping Disaster, which cannot be seen in the short span of time that any one person is in control of a record. Creeping disaster can be caused by the atmosphere (air pollution and dust), light (actinic effects), temperature (variations), humidity (variations), vibration, parasites, saprophytes (insects and molds), small animals (rats, mice, etc.), mechanical failure (of control systems), and general use.

Events that can occur for the first two types of disaster can be similar in type even though they are different in scale. In any case, if the decision to salvage is made, action must be initiated within a short time.

C. Need For Action

The longer records remain in folders and wet boxes, the more difficult the restoration process becomes. Within 24 hours, pages may begin to stick together. If water-soaked records are allowed to sit intact, within 48 hours mold begins to form; if they remain in that state for a longer period, they will form a hard mass. Restoration at this point is almost impossible. Therefore, prompt action is essential to an effective and successful salvage operation.

D. The Creeping Disaster

The third type of disaster, creeping disaster, must be continually corrected wherever it is recognized as occurring. Recovery from this type of disaster, except for the volume of records involved at one time and their general physical state, also involves cleaning, stabilizing, and mending, as does the final stage of recovery from the other two types of disaster. The poor physical condition of records is magnified when they are caught in catastrophic disasters.

E. Scope of Planning

It is impossible to draft an all-encompassing disaster plan for any records holding, because there is no way to predict the exact circumstances of any such happening. However, the best defense is a good offense (see Appendix 1). Specifically, predisaster measures must be taken to:

1. Establish a core disaster team and train them in disaster salvage techniques.

2. Develop a local disaster recovery plan.

3. Review present protective/security systems for potential problems where an upgrade of storage conditions could avert or lessen the risk of disaster (for example, the addition of fire extinguishers).

4. Distribute home copies of the plan to all core team members and inform all employees of the existence of this plan and the Bureau's plan, and each person's potential role in a recovery operation (see BLM Manual Section 1170.35).

5. Compile lists of local suppliers of services and equipment (paper, film, and magnetic tape conservation and preservation practices) used to combat disasters.

6. Purchase supplies unobtainable from local sources.

7. Compile the necessary accumulated information into a disaster check list (see Appendix 1).

8. Once the plan and preparations are done, conduct mock drills (like fire drills) to test the effectiveness of the recovery program (see BLM Manual Section 1170.32B). The most frequent cause of mismanagement of disasters is insufficient training. Don't get caught in the trap of having a plan but not really knowing what to do with it. Remember, it is not a question of if a disaster will happen, but when!

F. Disaster Site Review

It is important that firemen and police have an opportunity to review emergency plans with management to get to know the affected buildings, records, records holding areas, and the importance of the records so that their efforts during emergencies do not become counterproductive. Key staff members should be known to them, and some system of identification, such as Federal Identification Cards, or badges should be worked out so that staff members are not barred from the scene at the time they can be helpful. Where practical, a list of names of authorized employees should also be sent under memorandum to both the local police and fire departments. These lists must be kept current.

G. Securing The Area

Security during a disaster can be a problem. Volunteer help can be invaluable, but staff or security personnel should plan to keep other unauthorized persons from the premises. Once the fire, flood, or other catastrophe is over, the building must be secured physically to keep out the curious (there are many).

H. Climatic Consideration

Consideration must also be given to the climatic conditions that have a bearing on treatments used in all three disaster types. One salvage action will often take precedence over another because of temperature and humidity.

I. Safety Considerations

Although the specifications in this handbook are dedicated to the recovery and preservation of records materials deemed necessary to satisfy operational, legal, and historical requirements of the Bureau, in no case is human life or health to be placed in jeopardy to recover or protect the records. Emergency plans for the evacuation of buildings in the event of fire or bomb threats must be followed. When it is apparent that a civil disturbance or other hostilities may present a potential for compromise of sensitive information, custodians will assure the retrieval and locking of all such material in an approved security container. Employees will take no personal action to protect any records area or records against hostile action by intruders, but will notify the GSA Federal Protective Service (Public Building Security) and other local enforcement officials as necessary.

J. Human Health

In the event that flood waters have flowed or backed-up from sewers, the health of employees is the first concern. Protective gloves, clothing, etc., must be furnished to employees working in unsanitary conditions. Tetanus antitoxin or toxoid shots must be considered for all of the rescue workers. Be aware of possible allergies. Contact your health unit or county health officials.

K. Chemical Use

Recovery and restoration work requires the use of chemicals, some of which can pose a threat to human health and safety if used improperly. These chemicals, when used by or around a workforce, are governed by the employees "Right-To-Know" laws. Formal curatorial training, for key employees, will include instruction on the proper use and handling of chemical agents. All offices using any chemicals must maintain up-to-date copies of "Materials Safety Data Sheets" (MSDS) (see Illustration 2) that are accessible by employees. Trained key employees must never assume that workers are knowledgeable. Training must be provided as each new task is assigned if different chemical substances are to be used. Key employees are also responsible for initiating the use of respirators when conditions warrant. (See Manual Section 1273.)

II. DISASTER RECOVERY PLAN, PREPARATION.

A. Core Teams.

1. Responsibilities

Core teams will be established in the Washington Office, Denver Service Center, State Offices, District Offices, and other detached offices as approved by the State Director (see BLM Manual 1170.04). These teams are responsible for inventorying and assessing the value of the records within their office (including warehouse storage if any) as to type, location or locations (i.e., case files), security (including fire protection), and security back-up and replaceability (such as library materials). Teams are also responsible for writing and updating a local disaster plan and for setting up supplies and supply lines in preparation for disaster.

2. Proprietary/Sensitive Information

In the event of a disaster, some types of records require not only actions to provide for their physical security, but also arrangements to safeguard the information they contain. Accordingly, all core team members must be made familiar with sensitive information security requirements. (See BLM Manual Section 1273.3.) The responsibility for the security of and authority to handle these records is delegated to the core team at a disaster site to carry out a successful recovery.

3. Training Offficals

At least two persons from each core team, in addition to the designated records manager, are to receive training in paper preservation and conservation techniques. This training is to be provided from the Branch of Records and Library, Denver Service Center. After training, core team members are to meet as often as necessary to discuss, plan, purchase, and install conservation and preservation measures, to design systems and investigate devices for disaster prevention and recovery, and to determine if the local recovery plan must be revised if quarters are moved or there is a change of core team personnel.

4. Updating

For the purpose and ease of updating, it is suggested that the local recovery plan (BLM Manual Section 1273 Supplemental) and the local emergency operations plan (BLM Manual Section 1170 Supplemental) be written on a word processer or similar reproduction system.

5. Preservation Officer

The Preservation Officer for the Bureau, who is located at the Service Center, is assigned as a standing member on all core teams. The Preservation Officer will, in case of disaster, either consult by telephone or act on site to direct salvage operations and preservation techniques. Core teams must establish lines of responsibility and write them into their local plan. Copies of, and any updates to, local disaster plans are to be sent to the Preservation Officer (D-553B).

6. Local Emergency Coordinator-Authority

The office's designated Emergency Coordinator will act as a de facto member of the core team (see BLM Manual Section 1170.04 D) during the preparation of the Disaster Recovery Plan. The core team will answer to the Emergency Coordinator during the initial disaster. When recovery operations begin, the Emergency Coordinator will continue with overall emergency activities. Because they have special training in vital records recovery, the core team will be able to act separately as a recovery unit, coordinating with the Emergency Coordinator only as necessary.

7. Core Team Members Expertise

Core team members shown on the following lists were selected primarily for their broad knowledge and understanding of (1) Bureau programs and (2) the relation of vital records to continued Bureau operations. Consideration was also given to their managerial and supervisory experience and to their authority to act. If the designated core team member has been assigned either to the Local Evacuation Group (BLM Manual Section 1170.04H) or the Key Personnel Group (BLM Manual Section 1170.04I), an alternate person (or persons) may be appointed to the core team with the approval of the office's Director/Manager. However, the authority to act for disaster planning and during an emergency must accompany the appointment in writing. Also, in order to gain expertise in certain areas of records, other employees may be appointed to the core team at the discretion of each office's Director/Manager (e.g., dockets, cadastral, adjudication, etc.).

a. Core Team - Washington Office

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Chief, Branch of Records Management, WO-771
Chief, Branch of Support Services, WO-854
Chief, Safety Staff, WO-702

b. Core Team - Denver Service Center

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Chief, Branch of Records & Library, D-553
Chief, Branch of Office Services, D-558
Safety Officer, D-530
Information Resource Security Officer, D-102

c. Core Team - Boise Interagency Fire Center

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Chief, Division of Management Services
Chief, Division of Information Systems Management
Chief, Division of Fire Management

d. Core Team - State Office

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Chief, Branch of Administrative Services
Chief, Branch of Land and Mineral Operations
Safety Officer
State Records Manager

e. Core Team - District Office

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Administrative Officer
Records Management Specialist
Designated Safety Officer

f. Core Team - Resource Area

BLM Consultant: Preservation Officer, Denver Service Center, D-553B
Leader: Area Manager
Records Management Specialist
Designated Safety Officer

8. Work Crews and General Duties

In the event of disaster, the core team leader will assemble separate work crews. (When putting together the telephone cascade list used to assemble the core team (Appendix 1, Page 4), provisions of the Privacy Act must be observed). When safety permits, the access crew or crews will clear paths to the stricken area(s) and remove the records to a separate work area (pack out), where preservation crews will apply preservation measures to the records involved. The type and severity of the disaster will dictate the size and number of crews necessary. (See BLM Manual Section 1170.29.) Tetanus antitoxin or toxoid shots should be considered at this time. Take numerous photographs for later documentation of the extent of damage to the disaster area and to the records involved, and also to validate the decision either to proceed or not to proceed with a salvage operation. Include copies of the photos with identification in the postdisaster report.

9. Work Assignments

The access work crew will be directed to the records holding area(s) by a responsible person who is familiar with the area(s) in which the damage occurred. Technical advice will be furnished by the Safety Officer. All workers must have a clear idea of what is to be done in each operation and how to do the job both safely and in a manner that prevents further damage to the records. Other core team members will assume responsibilities in their areas of expertise.

B. Inventory, Assessment, and Local Plans.

1. Record Assessments

The Bureau Form 1273 Record Assessment (see Illustration 1) compiled by each core team will provide basic information for, and become a part of, local disaster recovery plans. Once the initial recovery plan is established, any changes of records location or physical environment must be noted on the assessment forms by the core team leader and updated copies distributed to all team members (including the Preservation Officer, D-553B.) Remember that documents such as case files can be found throughout the Bureau, from the Dockets section through the Adjudication section or Title Drafting section, and in District Offices and Resource Areas.

a. Records Inventory

Portions of the information required for form 1273 can be gathered from the BLM Records Inventory. However, the data contained on this form is essential to a recovery effort and must be updated regularly as records locations change.

2. Other Hazards

At the same time that the record assessment is being compiled, existing hazards and potential threats are to be mitigated whenever they are noted. Some common sense decisions can reduce potential damage during a catastrophe by changing many factors that amplify disaster situations. For instance, if records are stacked on the bottom shelves in a basement, they can be rearranged so all of the bottom shelves are empty. Boxed records should at least be placed on pallets until they can be shipped or moved to a better holding area.

3. Records Protection

To prevent damage to records lying out in the open, employees should not, as a rule, hold more than three unrelated cases or other records at their desks at one time, except where they are being compiled for distribution or reproduction. Also, consideration should be given to returning the records to a storage unit (cabinet, vault, etc.) at the end of the day.

4. Recovery Considerations

The inventory prepared by a core team (use the GSA Records Management Handbook "Disposition of Federal Records" No. 7610-01-055-8704 to inventory the records and assess their value) should not be used as a final decision document when deciding whether or not to proceed with a recovery operation. The final decision must also be based not only on the assessed value of records but also on the severity of the disaster. Consideration must be given to the amount of time that will be required to salvage, as opposed to replacing, the affected records. Consider also if the security backup copy of the record will be economically and technically practical to reproduce. Above all, the new generation of copies must be readable.

a. The Voice of Experience

The decision on document recovery must be weighed very carefully. For example, the aftermath of the thunderstorm/flood of August 1, 1985, left the Wyoming State Office with about 20 cubic feet of aperture cards under water. Even though the original paper documents still existed, the decision to salvage and air dry was made. Because of this decision, substantial costs were avoided; only 12 single cards needed replacement.

5. Using the Assessment Form

If disaster strikes, the inventory will alert the core team as to location, type of records, probable hazards of access, type of action, and speed of action required for the records contained in any of these areas. The extent of damage must be assessed first. For instance, documents originally inventoried as replaceable may be less expensive, or require less time, to salvage than would replacing them. Sectionalized floor plans, if up-to-date, xeroxed onto 8 1/2 by 11 paper are invaluable if they are properly labeled and included with the inventory sheets. The inventory sheet can also be used to upgrade the physical security of areas where records are being used or stored.

6. Partial Recovery

In order to avoid the full cost of total recovery, some records of high value but with short retention requirements may be considered for sharp freezing and cold storage until they can be legally disposed of. In this case, a complete inventory of the stored boxes will have to be taken so that individual records may be retrieved and hand-dried for use if necessary.

C. Catastrophic Disaster Recovery.

1. Availability of Workforce

Catastrophic disasters, such as earthquakes, present a more serious problem to a BLM recovery operation than those confined to the office environment. Employees will be more concerned with their families' welfare and the salvage of their homes and property. Thus, many employees will not be available to perform an office recovery operation. (See BLM Manual Section 1170.29.)

2. Alternate Offices

Broken telephone lines and power outages can make communication almost impossible. Broken water lines can greatly hamper any recovery effort. Therefore it is important, when formulating local disaster plans, for each office to have a designated alternate office that will assemble and transport work crews, food, water, semi-trucks, and supplies for records recovery operations at the disaster site. Selection of alternate offices must be approved by the State Directors given the fact that the most practical alternative could very well reach across State boundaries.

3. Communications

In catastrophic disasters, the news media will usually provide the first announcements of the event outside the stricken area. The designated alternate office must be prepared to begin transporting work crews, etc., to the disaster within 8 hours of the first announcement unless official notification not to react has come from the affected office. When all means of local and outside communication are disrupted, the Federal Emergency Management Agency (FEMA) is equipped and can provide emergency communication service. The local County Emergency Preparedness Office should be contacted by the core team leader when writing the recovery plan since this office is the link with FEMA.

4. Office Coupling

The Washington Office is to be included in the Eastern States Office plan, the Denver Service Center will be included in Colorado's plan, and BIFC will be included in Idaho's plan.

D. Supplies, Equipment, and Work Areas.

1. Availability of Supplies

Many supplies normally available to disaster workers could become scarce and time-consuming to find if a widespread catastrophic disaster occurred. For example, in the case of a hail storm, where a large area of a city was affected, the demand for recovery products, such as plastic sheeting, could easily outstrip the supply.

2. Storage of Supplies

There are also some products unavailable from local suppliers that must be ordered from distant sources. Therefore, it is essential that certain items should be collected (contingent upon funding) and stored before a disaster strikes (see Appendix 2).

3. Disaster Cache

Each State will designate at least one office to provide space to cache disaster supplies, with authorization to transport those items to any BLM office within that State's jurisdiction for disaster recovery. At the discretion of the State Director, a second cache may be established at a second office location to minimize distance and travel times.

4. Cache Requirements

The predisaster cache should be kept in two lockable supply cabinets (18" x 36" x 81") with items such as bricks, plastic pans, and buckets stored on the bottom shelves. If necessary, some items can be placed in plastic garbage cans where the lids will be taped on. Dangerous items must be stored in a flammable liquid cabinet (lockable) approximately 18" x 36" and 36" high. The entire cache will require about 16 square feet of floor space. Label all of the containers as "DISASTER CACHE" and provide the names and office phone numbers of three people who will be issued keys. Keep an inventory of the supplies in each container and the date when purchased. Dates of each inspection must be added to the inventory.

The storage facility should be, if possible:

a. Away from, or detached from, any office containing any records holding.

b. In a building already in use by the local office (government-owned or leased.)

c. In a single story warehouse-type building, with reliable heating (some preservation materials should not be allowed to freeze), air conditioning, electrical outlets, and running water.

5. Cache Location

Any storage building should also be assessed as to its geographic location and any existing hazard potentials, especially where natural conditions such as hurricanes, earthquakes, floods, etc., are a serious consideration. The building must also be accessible (bridges, roads, etc.) by BLM employees after a major catastrophe. (CAUTION: Unless otherwise instructed, only salvage work is to be done at the time of the disaster. Preservation and conservation measures are to be applied only after the records are safe from further damage.)

6. Assistance from State Agencies

Contact your nearest State Emergency Management Agency office, usually located in each State capital. This agency can provide you with maps and charts depicting potential hazards from various storms, floods, earthquakes, etc.; their frequency; and perhaps even the probability of their potential destructive force. This information is vital when you are formulating your local disaster recovery plan.

7. Reporting/Updating

When alternate office coverage is established and the predisaster supplies have been stacked, properly marked, and cached, each office will submit a report to the Denver Service Center, D-553B, and a copy to their alternate covering office that lists their disaster materials and where they are located, with names, addresses, and office and home phone numbers of core team members. This report must be updated whenever changes are made. Building security and/or police and fire departments are to receive a copy both of this list and of the local recovery plan.

III. DISASTER RECOVERY PLAN, ACTION.

A. Water Damage.

1. Frequency of Problems

Water infiltration is the most frequently occurring cause of damage to records either as a primary source (burst pipes) or coupled as a secondary source (fire sprinkler systems or leaking roofs).

2. Need for Prompt Action

The primary emphasis of this plan is on the salvage of water-damaged materials because of the need for immediate action. Short of destruction by explosion or fire, the damage to records resulting from heat, smoke, and water is probably the most severe. However, virtually any wet or smoke-damaged document can be restored if prompt and proper action is taken. Although the specific methods for salvaging small amounts of material may differ from the methods for salvaging large amounts, the same general procedures are used for any type of water damage.

3. Records Replacement

Even if the decision is made not to salvage the most severely damaged documents because there is some form of security backup available, the wet record mass must be carefully separated (using preservation techniques) and a list made so you will know what documents will need replacements.

Documents and shelving in and around a damaged area will also require some form of treatment.

B. Damage Assessment, Documentation.

1. Stabilizing the Building Environment

The first step taken after fire, explosion, or flooding is to ensure that the building is safe to enter. Notify the Fire Department in all cases. The core team leader, under the authorization of the Fire Chief, will notify personnel when the damaged building is no longer a threat to human life. Members of the Fire Department, in most instances, take responsibility for eliminating all electrical and gas hazards. The core team leader or designated team member must confer with the Fire Chief to have the heat turned down if it is still operable. If the air conditioning system is in working order, it should remain on. In both instances, the reduction of temperature and humidity will inhibit the growth of molds.

2. Initial Damage Assessment

Upon entering the damaged area, all entrances and aisles should be cleared. Take extensive photographs. Open all doors to allow as much ventilation as possible. Rechargeable flashlights are an invaluable aid. At this point an assessment of the damage can begin (see Appendix 1). The core team, which now must also include a responsible person (or persons) who is familiar with the stricken area(s), must make their assessment as to:

a. Extent of area(s) of damage.

b. Type and extent of damage to the documents (heat, water, smoke, etc.)

c. Joint decision to replace, reconstruct, or salvage, considering:

(1) The time that the records will be unavailable for operational and public use.

(2) Costs to sort and copy backup films and documents.

(3) Priority of records to be removed from the stricken area.

(4) Hazards to other records.

(NOTE: See Appendix 1, Priority of Records to be Salvaged.)

d. Selection of a salvage operations site.

The Preservation Officer (D-553B) must be notified of the above assessments and a plan of action must be discussed.

3. Access Crew Duties

The work team responsible for providing access will continue, once the aisles are clear, to place buckets to catch dripping water; remove water from the floor so other records will not be splashed; drape plastic sheeting over desks, shelves, etc., as added protection; and then monitor water leaks in the disaster area and any floors above and below the stricken zone for possible infiltration and further damage. Remove plastic sheeting as soon as the water damage hazard is eliminated and continue ventilation drying. Keep checking for signs of mildew.

4. Lighting, Testing, and Retrieval

If the building's electrical system is a hazard, portable power sources should be obtained to provide electricity for lighting and wet/dry vacuum cleaners. Test the water on the shelves and floor for pH as the affected records may have to be treated later for acid infiltration resulting from acid compounds dissolved in the invading waters. Records that have fallen to the floor must be moved by, or under the direction of, a person trained in salvage practices, because these documents have probably absorbed the most water and can be damaged beyond repair if they are not lifted on a support.

C. Treatment of Wet Materials.

1. Degree of Damage

When time is available or amounts are small, damaged archival/vital and one-of-a-kind documents should be divided into three groups (see Appendix 4):

a. Those that were not damaged and need no treatment, except for possible relocation.

b. Those that are only slightly damaged and can be fan dried or air dried right away.

c. Those that will be packed and frozen. (See Appendix 1 for packing instructions.)

D. Treatment of Records Without Freezing.

1. Minor Disaster

If the core team decides that most or all damaged materials can be dried without freezing, drying rooms should be set up away from the affected area. This normally would involve only a small volume of material, as large amounts of damaged records or those containing photographic material should be frozen. Work surfaces should be covered with plastic sheeting. Priority records are moved first, followed by the wettest materials, which are usually found on the bottom shelves. Those documents that are the least damp are removed last. Loose records which are moved should be appropriately labeled to identify their record group number, series description, box number, and former location. Here again, photographs taken before moving any records are invaluable as references.

2. Cleaning Procedures

Very little cleaning should be attempted on wet records that will not be frozen. (If the records are severely flood damaged or mud-saturated, they should be frozen so each item can be properly treated later.) Closed bound volumes can be gently dabbed with a sponge to remove mud, but not rubbed or brushed. Do not open the volumes. Loose textual records should not be washed.

3. Fast Drying

Fast drying is the primary consideration for wet, unfrozen material (see Appendix 4). Bound volumes should be blotted with unprinted newspaper or paper towels at intervals of 2 to 10 pages, changing the interleaving as frequently as possible and as often as necessary until dry. When partially dry, the volumes may be fanned if the pages are strong enough to support the book standing on the end. Textual records also should be blotted with paper towels or plain newspaper and placed separately on a clean, disinfected shelving or in a clean work area. Drying in an air conditioned and humidity controlled room is the ideal situation. Relative humidity of 39 to 50 percent is optimum. Electric fans should be used to circulate air on the documents. Extreme care should be used in trying to separate wet sheets of paper.

E. Treatment of Records to be Frozen.

1. Major Disaster

For stabilizing and restoring a large volume of water-damaged materials, sharp or blast freezing documents at a low temperature (-20°F) is the most effective method. Cold storage provides accessible and inexpensive space in which a large volume of material can be stabilized in the condition it was found, preventing further deterioration while awaiting treatment. It also provides time to assess the damaged material and to restore the building or stack area affected.

2. Preparation for Freezing

The general condition of the damaged materials will determine how much time can be spent in preparation for freezing. It is preferable to try to remove accumulated mud and filth, but is rarely possible because of lack of time and the quantity of material to be handled. Preparation should be directed instead toward establishing a dry area to pack records prior to their freezing. The work area tables and floors should be covered with plastic sheets and should be easily accessible from the stricken area.

If a work area cannot be set up within the building, folding tables can be set up in semi-trailers.

3. Document Handling

How the damaged records will be dried determines the way they should be packed for freezing (see Appendix 1, Page 15). If only a small volume of material is frozen, it is economically more feasible to send it to a local refrigeration unit, with drying done later by staff personnel. Bound volumes must be loose or open wrapped in silicone, freezer, or waxed paper to prevent their sticking to each other. Groups of textual records should be wrapped in the same type of paper in packages not to exceed 2 inches in thickness. All bundles and volumes should be labeled and the information recorded in a notebook. Do not use pens with water base inks for marking the bundles; ink pigments can dissolve and infiltrate into the documents.

The simplest test to see if pens have a nonwater base ink is to remove the cap and smell the marking tip. If you detect a strong chemical odor, this is the correct pen to use. Marking with the chemical base pen should be done only where there is at least a double layer of wrapping paper covering the document(s).

4. Preferred Drying Method

If a large volume of holdings is damaged, the least expensive and most successful method for drying is vacuum freeze drying. This technique allows the water to pass from the frozen to the vapor phase without going through the liquid state (sublimation). It is also effective in reducing stains on documents and the odor caused by smoke. Vacuum freeze drying should always be used with water-damaged materials infested with mold at the time of freezing, as the records can be professionally sterilized with ethylene oxide at the end of the drying process at little additional cost. Consult with the Preservation Officer.

F. Moving and Packing.

1. Document Packing

Materials designated to be vacuum freeze dried should be placed in interlocking plastic milk crates or in one-cubic-foot cardboard archive boxes. The milk crates are lightweight and provide for air circulation and drainage. In a disaster situation, dairies and large chain food stores have made their milk crates available at no charge (see Appendix 1, Page 14). Materials should be placed unwrapped in the cartons until they are loosely packed approximately three-fourths full. Bound volumes should be open wrapped with freezer or waxed paper and placed in the cartons on their spines so they will not fall over or be further distorted. They should not be packed too tightly to allow for air circulation. Oversized material should be placed on cardboard and wrapped in packages not to exceed 2 inches in thickness.

2. Mass Destruction

In cases of mass amounts of destruction, either conveyor belts or a human chain should be used to move the damaged material. If possible, the material should be packed on-site in an adjacent dry area. Two teams of the same size should be organized, one to collect the damaged documents and the other to pack them in plastic milk crates. Because wet material is much heavier than dry, personnel should be cautioned to use proper lifting methods to prevent back sprain or other injury. The milk crates should be numbered and, if available, copies of the location registers or other finding aids should be annotated to record where materials are being transferred. Accurate labeling or inventorying of records as they are moved will save a great deal of time later when records are returned.

3. Fire Damage

Burned and charred material requires special care in handling, as the paper or bindings are very brittle. Support single sheets on cardboard and secure them with another sheet of heavy paper or cardboard on top. A layer of waxed paper on both sides of the document will prevent it from cementing itself to the cardboard.

4. Refrigeration

Large volumes of wet material should be moved directly from the building to the freezing facility, preferably in refrigerated trucks. Refrigerated trucks are not capable of freezing the records but will reduce the risk of mildew formation. For small collections of documents, dry ice may be used to freeze material for transport in unrefrigerated trucks to the freezing facility. If dry ice is used, then dry insulated, gloves must be worn when handling dry ice. WARNING: Dry ice is the solid form of carbon dioxide (CO_2). Do not allow employees to work in an unventilated enclosure where this material is present. Employees must also wear dry clothing to protect themselves as the temperature of dry ice is -110°F.

5. Area Sterilization

After material has been sent to the freezing facility, stack areas should be repaired and sterilized. Bare floors and walls can be sterilized with water soluble solutions of Lysol or other fungicidal products. Carpets can be treated by lightly spraying them with Listerene, and shelves and drawers that actually come in contact with records should be lightly sprayed or wiped with an alcohol solution of Thymol or lined with thymol paper (see Appendix 1, page 10, Thymol Treatment for Mildew).

6. Restoration of Conditions

Documents should not be moved back into the stacks until the shelves are thoroughly clean and dry and the proper temperature and humidity is established both in the room and the documents. As large collections have been safely kept in a frozen state for as long as 6 years, there is ample time to reestablish those conditions. During the period that the records are at a freezing or drying facility, a designated member of the core team is responsible for ensuring proper security and protection.

G. Treatment of Photographic Materials and Microfilm.

(NOTE: All photography and photocopy materials are part of BLM's records.)

1. Silver Halide Materials

Photographs: Photographs and uninked (updated) photographic line work are of no concern as long as the negatives still exist. When the only existing photographs and photocopy materials become wet, they can be rinsed (do not scrub) in cold water and through the wash and dry portion of machines similar to the Kodak Startech Processors (model 244). Other small photographic materials such as silver negatives, microfilm duplicates (microfiche or aperture cards), silver microfilms, and electrostatic microfilms each must receive different treatments; therefore, it is important to consult with the Preservation Officer, D-553B, before you attempt to remove any of these records. (See Appendix 10.)

Silver halide photographic material is perhaps the most easily damaged record. Therefore, the situation must be carefully assessed before proceeding with salvage work as the wet emulsion can scratch from the slightest touch.

2. Emergency Stabilization

For emergency stabilization, wet black and white photographs, negatives, and microfilm should be treated with an emulsion hardener, sealed in polyethylene bags, and placed in plastic (not metal) garbage cans under a gentle stream of clean, cold running water. This should be done while the materials are still wet; they should never be allowed to dry before attempting to salvage them. They may be left in the cold running water for up to 3 days, although treatment at a professional photofinishing laboratory equipped to handle water damaged photographs should begin as soon as possible. The Eastman Kodak Company also provides emergency service for cleaning black and white photographs. Obtain the location of their nearest emergency lab from you local dealer. Other photo labs in your area may also be able to handle such emergencies. Obtain addresses for all of these local facilities and any in nearby cities.

Under extreme disaster conditions, large volumes of roll and jacketed master microfilms should be considered for recovery using sharp freezing and vacuum-freeze drying. Do not vacuum dry. Consult with the Preservation Officer. (See Appendices 9 and 10.)

3. Aperture Cards

Wet aperture cards and slides should be kept wet. When they are packaged in small bundles they will be kept separated by their pasteboard mounts. Treatment should begin as soon as possible. Moist and damp photographic materials should receive different treatments. Consult with the Preservation Officer (D-553B) at the Denver Service Center.

4. Color Slides

The few color slides held by an office must be transported to a professional photofinishing lab within 48 hours after immersion in water, as the colored layers will then begin to separate. If this is not possible, it is best to sharp freeze the slides until special arrangements can be made. However, there is some risk in freezing, as the formation of ice crystals may rupture the emulsion layer.

H. Treatment After Drying of Records.

1. Repair and Restoration

After the critical drying operation is over, all returned dry material should be placed in a secure work area, rehumidified, and separated according to the different degrees of repair or restoration needed. Some documents may have escaped damage, while others may require cleaning, flattening, or minor repairs. For badly damaged documents, the advice of either a professional curator or the Preservation Officer, D-553B, should be solicited.

2. Monitoring for Molds

Before being returned to their original locations, the records should be monitored daily for several weeks to ensure that mold or fungus has not developed. Random monitoring should continue at regular intervals for at least 1 year after reshelving.

3. Postdisaster Report

In the event that a disaster does occur, a postdisaster assessment report should be written to determine the effectiveness of the recovery techniques used. Extensive photographs and written records of the conditions of the building and the procedures followed should be kept. It is also important to document all resources used to cope with a disaster, including personnel, materials, time, and expenses. (See BLM Manual 1170.33A "Coding Assistance Costs.")

I. Review of Major Actions.

1. Notification

The core team leader will notify and brief all team members of the nature of the disaster. Include and consult with a responsible person who is familiar with the records in the disaster area. Consult with the Fire Chief as to when the building may be safe to enter. When safe, have your work crews ready.

2. Stabilization and Assessment

Lower temperature and humidity levels; clear major entrances and aisles. Assess the character and extent of damage; contact the Preservation Officer, D-553B (FTS 776-6641, 303-236-6641, home: 303-922-7086); determine method of treatment necessary. Take photographs for documentation in reports.

3. Vendors

Contact sources for needed salvage equipment; arrange for trucks to transport records to freezer facilities, if necessary. All purchases and rentals must be carefully documented.

4. Establish work Areas

Establish a large, clean work area with good circulation. Brief workers on salvage procedures.

5. Puck Out

Remove top priority records first. Thereafter, remove the wettest materials. Remember, record keeping is critical; inventory or label records.

Use extreme caution when handling wet records; do not attempt to open bound volumes or compress wet textual records.

6. Freezing

For large quantities of wet records, it is most economical to transport them to a local freezer facility and then to a firm with vacuum drying facilities. It is preferable that refrigerated trucks be used. Mobile vacuum drying chambers are now available through vendors where the damaged material can be dried "on site."

7. Packing Techniques

Pack records in plastic milk crates; open wrap bound volumes in freezer or waxed paper so they will not stick together. If vacuum drying is planned, individual textual records do not need to be wrapped. If material is to be air dried, records should be wrapped in bundles not more than 2 inches thick before they are frozen. Do not pack milk crates too tightly; one-half to three-fourths full is desirable. If milk crates are not available, use dry boxes. (Archives records boxes are ideal.)

8. Air Drying

To air dry single sheets, use caution in separating a wet mass of sheets. Do not dry archival records by sunlight or direct application of heat. Your Records Manager is aware of the different records categories. Use sheets of paper towels or unprinted newsprint to interleave, replacing them often.

9. Photographic Materials

Water-soaked black and white photographs, negatives, and microfilm should be kept wet until they can be professionally treated. Treat with an emulsion hardener, seal in polyethylene bags, and immerse in plastic garbage cans with clean, cold water before sending them to a photographic service.

10. Stack Area

Repair and sterilize the damaged stack area. Shelves and floor should be wiped with Lysol or other disinfectant. Check thoroughly for hidden water. Do not disinfect paper records with water-soluble sterilizers.

11. Inspection

Carefully inspect all records for indications of mold or mildew growth prior to returning them to the shelves. In no case should any volume or record be returned to the shelves until completely dry.

Monitor records in stack area for at least 1 year for mold or mildew.

12. Postdisaster Report

Write a postdisaster assessment report. Rewrite the disaster preparedness plan to incorporate the most effective methods used and new information gained.

13. Timing

It is important to reiterate that timing is a crucial factor in any situation involving water damage. The longer records remain in folders and wet boxes, the more difficult the restoration process becomes. Within 24 hours pages may begin to stick together. If water-soaked records are allowed to dry intact, within 48 hours mold begins to form; if they remain in that state for a longer period, they will form a hard mass. Restoration at this point is almost impossible. Prompt action is essential to an effective and successful salvage operation.

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Chapter IV

IV. CREEPING DISASTER.

A. The Records Manager.

1. Combating the Creeping Disaster

The records manager (or equivalent official) is the individual responsible in each office for combating creeping disaster, i.e., the gradual deterioration and destruction of documents over time. Vital, one-of-a-kind, and archival documents are the primary records that must be preserved under the guidance of this individual. Salvage includes everything from simple document cleaning to major physical restitutive treatments. The records manager (or other individual) must be trained to recognize stages of document deterioration (aging, folding/unfolding, etc.) and damage (tears, biochemical staining (foxing), mildew spore, broken bindings, etc.), and must be able to apply, or direct another employee in applying, preservation techniques.

2. Restoration Techniques

Basically, restoration techniques are to be kept as simple as possible. No adhesive tapes of any kind are to be used for mending. Use only acid-free mending papers with acid-free, water-reversible adhesives to repair vital, one-of-a-kind, or archival books and single documents.

3. Training

After receiving adequate training, the records manager will be expected to determine what records need repair work and to schedule specific records for treatment. The records manager will also be responsible for ordering and maintaining the small stock of supplies required for preservation work. This work will be done somewhere within the secure confines of the records area. Once trained, the records manager will be able to perform and supervise curatorial duties rather than function only as a custodian.

4. Liaison

The records manager is required to contact and discuss proposed restorations with the Preservation Officer at the Denver Service Center, D-553B, before starting any preservation work.

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Chapter V

V. MAGNETIC MEDIA AND AUTOMATED DATA PROCESSING RECORDS.

A. Electromagnetic Tapes, Cassettes, Disks, Diskettes, Etc.

1. Machine Readable Media

Magnetic recording materials require some type of machine to read them. In time, the machines designed to read the electrocoding on these materials may not be available because of obsolescence. Time is also an enemy to the "clarity" of the magnetic printing on the surface of these materials. These drawbacks are but two of several reasons why the Bureau does not consider any machine-readable record as the "record copy." In addition, most of this material has a security back-up elsewhere. Recovery of these records must, therefore, be considered only if they are either one-of-a-kind or are too costly to reenter in the computer.

2. Storage Considerations

Generally, magnetic recording media are not affected if they spend a short time in water (24 hours or less). Both the magnetic coating and the support base are little affected by moisture. The material that binds these two layers together, however, will dissolve in water. Even ambient storage room humidity, if too high, will attack this adhesive layer, resulting in a "creeping disaster" scenario. Long-term archival storage areas are best maintained at 20 percent relative humidity and 50 degrees F., while magnetic media that are in use are best kept at 50 percent relative humidity and 50 degrees F.

B. Automated Data Processing Records.

1. Washington Office Responsibility

The Bureau Information Resource Security Administrator, WO-773, is responsible for collecting detailed information on present and future magnetic recording media. Precise methods for disaster recovery of tapes, disks, etc., must be gathered from each manufacturer of these products and distributed to all BLM users of each product.

2. Security Backup

Existing security backup is probably more than adequate for most BLM records on electronic media, and contingency planning is generally in place for recovery from disasters that can strike these records. However, until it is certain that backup security records are intact, all water-damaged electronic records must receive some preliminary treatment, since at this point they are still considered to be recoverable records. Consult with the Bureau Information Resource Security Administrator if you are unsure as to how you are to proceed.

C. Computer Tapes (General).

1. Damaged Tapes

Heat-damaged tapes that are most probably erased or impossible to run because of melting may be discarded under proper authority as destroyed records (44 USC 3310; 41 CFR 101-11-407-2). Tapes that have been near a hot spot but that show no effects of heat damage on the storage case or tape should be drained if they have been infiltrated by water. Flood-damaged tapes must be rinsed in clean, cold, gentle running water to remove as much mud as possible before any attempt is made to dry them. If these tapes are needed, they can be hand-dried and run through a cleaning machine before they are copied. It has been found when copying these "cleaned" tapes that the magnetic pickup heads will need additional cleaning during each run.

D. Cassette Tapes - Audiovisual - Audio - Video.

1. Procedures for Cassette

Cassette tapes must be handled the same as computer tapes. Do not attempt to open the cartridges. If cassettes are wet, keep them wet until it is known if there are back-ups.

E. High Speed Disk Packs.

1. Procedures for Disk Packs

If information on a high speed disk pack is secured by a backup tape or disk, the disk pack should probably not be run because of the risk of damaging the pickup heads. However, the disk pack can be rinsed under cold, gentle running water by someone familiar with proper handling techniques and dried using lint-free soft cloths. This operation may allow recovery of the disk pack if the backup proves defective.

2. Recovery Risks

If no backup exists, the disk pack should be rinsed as described above and then dry cleaned as soon as possible. Even when proper cleaning methods are used, there is still a risk of damaging pickup heads when recovering data. For this reason, consideration should be given to reentering data rather than recovering it.

F. Word Processing Disks.

1. Recovery Procedures

Most word processing disks are sealed in a plastic retainer envelope and covered by a paper protector envelope. When these disks have become wet, remove the protector envelope and carefully rinse the disk, still in the retainer, under clear cold running water. Then loosen or cut the back flap of the retainer envelope and place the disk into a clean bucket with distilled water. The recording surface will thus be protected and wet until each disk can be cleaned, dried, repackaged and duplicated. Avoid touching any exposed recording surface of the disk. Be sure to label disk hubs using a felt-tip pen so you can keep track of your disk library. Contact the Bureau Information Resource Security Administrator at the Washington Office (773) for more information.

Glossary of Terms

Note: Communication is important when preparing to combat a potential disaster. Communication becomes critical once a disaster actually occurs. The language of the preservationist must, therefore, be fused with that of the records person so a recovery operation can progress as quickly as possible. The following glossary has been compiled to explain words used in the text of this recovery plan as well as those used in the regulations cited that deal with records management.

-A-

absorbency: the property in paper which permits a sheet to take in the liquids or vapors it contacts.

absolute humidity: the amount of water vapor in any given unit volume of air.

acetate film (acetate base film, safety film): film which has a base of cellulose acetate or triacetate rather than the highly inflammable cellulose nitrate.

acid: a chemical substance which has a pH below 7. A pH level below 5 is considered significantly acid in paper and can lead to deterioration over time. Chemical compounds contained in materials such as wood pulp give the paper the quality of acidity.

acid migration (acid transfer): the transfer of acid from acid material, such as ground-wood paper, to a less acid paper when the two are stored in contact with one another. The transfer will usually cause the less acid material to become stained and weakened.

acid-neutralizing paper: a type of paper which contains a neutralizer intended to absorb any acidity that may appear in the environment of a book or work of art on paper.

active files: see "current records."

adhesive: a substance capable of holding materials together by surface attachment. It includes such materials as glue, mucilage, and paste.

administrative records: see "housekeeping records."

administrative value: in appraisal, the usefulness of records to the originating or succeeding agency in the conduct of current business. See also "evidential value," "fiscal value," "informational value."

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administratively controlled information: privileged or other nonsecurity-classified information in records, sometimes bearing designations such as "For Official Use Only" or "Limited Official Use" to prevent its unauthorized disclosure. See also "classified information," "closed file."

alkali: a caustic substance having a pH above 7. It has the quality of neutralizing acid.

all-rag paper: paper made of 100 percent rag material. "Rag content" paper is made with a smaller percentage of rag fiber.

alum: aluminum sulfate used with rosin to size paper, giving it water-resistant properties.

ambient light: the surrounding light; general room illumination or light level.

aperture card: a card with a rectangular hole or holes specifically designed for the insertion of a frame or frames of microfilm.

appraisal: the process of determining the value and thus the disposition of records based upon their administrative and other uses, their evidential and informational or research value, their arrangement, and their relationship to other records.

archival quality: (1) for microfilm, the degree to which a processed print or film will retain its characteristics during a period of use and storage; its ability to resist deterioration for a lengthy, specified time; (2) for paper, its ability to resist deterioration.

archival value: the determination by appraisal that records are worthy of permanent preservation by an archival agency. See also "historical value."

archives: (1) the agency responsible for selecting, preserving, and making available archival materials; also referred to as an archival agency; (2) the building or part of a building where such materials are located; also referred to as an archival repository or depository. See also "permanent records."

archives administration: the management or direction of the program of an archival agency, including the following basic functions: appraisal, disposition, accessioning, preservation, arrangement, description, reference service, exhibition, and publication.

archivist: used in reference to the Archivist of the United States.

artifact value: use of the original document to prove there have been no alterations to data, dates, seals, or signatures. Also known as "forensic value."

-B-

backing: (1) the process of gluing the rounded back of a book and applying reinforcing liner. Backing follows the rounding operation and precedes casing-in; (2) a method of reinforcing a print by applying a sheet of paper to the reverse side with an adhesive.

bands: (1) the cords or tapes onto which the sections of a book are sewn; (2) the ridges found horizontally across the spine of some leather-bound books.

barrier sheets: pieces of well-sized acid-free paper used as barriers to prevent the migration of acid or oil from one material to another.

"bind as is": a direction to the binder to bind material in the order or in the condition in which it is submitted, regardless of any apparent imperfections.

bind in: to fasten securely into the binding; usually referring to supplementary material.

binder's board: a heavy grade of single-ply solid paperboard used for book covers. It is made from mixed paper stock and low grade rags.

binding: (1) in book manufacturing, the process of assembling the finished book; (2) the structural materials, such as thread and glue, that hold a book together, and the attachment of a cover which may be made of any number of materials.

binding slip: the sheet of instructions sent to the bindery with each volume specifying the binding requirements for that particular volume. These instructions should be typewritten to avoid errors.

bleeding: (1) the seepage of ink beyond the line of shape of a printing plate. It can be caused by too much oil in the ink, too much pressure when printing, or both; (2) the loss of color from paper as a result of contact with oil or water.

bleed-through: a defect in photomechanical reproduction in which an image printed on one side of a paper, or other material, can be detected on the opposite side. It is a common fault found in sound recordings.

blistering: small eruptions found on a sheet of paper that can occur when machine-made paper is dried too quickly.

boards: (1) the wood, paperboard, or other base used to protect the sides of a bound book; (2) original boards, backed with paper, in which many books were temporarily encased for distribution prior to the 1830's when edition binding cloth came into use.

body: the main text portion of the book formed when all of the signatures have been sewn together; the body does not include the case, or cover, of the book.

bond paper: a strong and durable paper where strength, durability, and permanence are essential requirements. It originally referred to paper used for letterheads, legal documents, stock certificates, and government bonds.

book paper: a general term used to indicate a class of papers (coated and uncoated) used for the printing of books.

bookworm: a term used to refer to insects, moths, or beetles whose larvae destroy books by feeding on their bindings and pages.

brayer: a printer's hand inking roller.

break: a parting of adjacent sections of a book due to the loosening of the sewing.

bristol: a paperboard that is hard, strong, and rugged and has a smooth surface suitable for writing. Index cards are an example.

brittle: fragile, easily broken. Paper becomes brittle from the acid in its composition as well as from exposure to light and heat. Film becomes brittle principally from exposure to light and heat.

buckling: a warping and twisting in several directions. In paper, a warp, bulge, or depression is caused by an unequal distribution of moisture. When a book begins to buckle, wrinkles can be found near the head and foot of the folded signature.

buckram: a filled binding cloth with a heavy weave cotton base. In the U.S. it is made to the specifications of the National Bureau of Standards. It is especially sturdy.

-C-

cartographic records/archives: records and archival material containing aerial photographs, maps, and related textual documentation.

case: the cover of a book, printed, stamped, and made the proper size to be placed upon a book. Attaching the book to its covers is called Casing-In.

case file: a folder or other file unit containing material relating to a specific action, event, person, place, project, or other subject. Sometimes referred to as a "project file" or a "transaction file." Also a collection of such folders or other file units.

cassette: (1) in tape recording, a standard container with two spools that holds magnetic recording tape; (2) in phototypesetting, a portable container for light-sensitive material. The cassette usually attaches directly to the typesetting machine either to feed or to receive material; (3) in microfilm, a double-core container enclosing processed roll microfilm designed to be inserted into readers, reader-printers, or other retrieval devices.

cellulose acetate: a chemically inert synthetic polymer compound used as a base in the manufacture of coatings and films because of its stability, transparency, and relative nonflammability. It can also be purchased in sheets and rolls to be used for the short-term protection of prints from surface soiling.

cellulose fiber: the primary component of paper. It is obtained by separating the nonfibrous elements from wood, woody plants, cotton, and other sources.

cellulose nitrate: a highly flammable film base that has been largely replaced by cellulose acetate and other plastic film bases.

central files: the file of several offices or organizational units physically and/or functionally centralized and supervised in one location.

chain lines: the widely spaced lines, about one inch apart, that run parallel to the grain on laid paper; also known as chain marks. They result from the chain wires that hold the laid wires together on the papermaking frame.

chronological file: see "reading file."

classified information: records or information requiring safeguards against unauthorized disclosure in the interests of national security or for the protection of individuals. See also "administratively controlled information," "closed file."

closed file: (1) a file unit or series containing documents on which action has been completed and to which additional documents are not likely to be added; (2) a file unit or series to which access is limited or denied. See also "administratively controlled information," "classified information."

cloth: the most commonly used material for the binding of books published in the English-speaking countries since the second quarter of the 19th century.

coated paper: paper that has a surface coated with adhesive and mineral pigments.

cockling: a pucker, bulge, or ripple in paper caused by uneven tension during its manufacture or by atmospheric changes during its use.

codex: unbound sheets in a manuscript; book form as opposed to a scroll.

collagen: the principal constituent of the fiber-network layer of hides and skins used in producing leather. When boiled, it partially hydrolyzes, yielding gelatin.

collation: the bibliographical description of the physical composition of a book. To collate, (verb) to examine a book or periodical volume leaf by leaf, and by signature, to verify its full content and arrangement to determine whether two books are identical copies or variants.

comprehensive records control schedule: see "records control schedule" and the "general records schedule."

COM: (1) Computer Output Microfilm: microfilm containing data processed by a recorder from computer-generated electrical signals, (2) Computer Output Microfilmer: a recorder which converts data from a computer into human language and records it on microfilm; (3) Computer Output Microfilming: a method of converting data from a computer into human language contained on microfilm.

conservation: (1) the prevention of deterioration as well as the restoration of deteriorated library materials. It includes the conservation of both the physical and intellectual content of library materials; (2) treatment, storage, and handling techniques which insure that objects remain in their current state of preservation.

copy: a reproduction of the contents of an original document, prepared simultaneously or separately, usually identified by function or by method of creation. Copies identified by function may include action copy, comeback copy, file or record copy, information or reference copy, official copy, and tickler copy. Copies identified by method of creation include carbon copy, mimeograph copy, ribbon copy, and electrostatic copy. See also "record copy."

correspondence: letters, postcards, memorandums, notes, telecommunications, and any other form of addressed, written communications sent and received.

cover, covers: the outer covering of a volume, no matter what material is used. The upper cover is the front and the lower cover is the back of the binding.

covers bound in: the original covers included within a later binding. Often the cloth or paper covers of a rare edition are preserved when the volume is rebound.

crop: (1) to excessively trim the margins of a book, especially at the top edge, which removes headings and page numbers. Cropping the spine edge of the leaves causes the printed portion of the page to appear in the gutter when the book is bound, which makes the book difficult to read (2) to eliminate unwanted portions of the copy, usually on a photograph, in order to focus attention on the central theme.

cubic feet: a measurement of volume for records, archives, and manuscripts.

curator: a person having the responsibility for the care, protection, and preservation of something. One who applies curative measures using approved technology to preserve something such as paper documents.

curl: the tendency of paper or film to roll up.

current records: records that are necessary for conducting the current business of an office and that must be maintained, therefore, in office space and equipment. See also "noncurrent records," "semicurrent records."

custodian: the person given official responsibility for the control of records at a file station.

custody: the guardianship of records, archives, and manuscripts that, in a strict sense, includes both physical possession (protective responsibility) and legal title (legal responsibility).

cut: to trim the edges of a book. Cutting is not as harmful as cropping (see "crop"). The term "uncut" is not to be confused with "unopened."

cutoff: termination of a file at regular periodic intervals to facilitate continuous disposal or transfer of the file series. Also called "file break."

-D-

damp stained: paper which has been exposed to dampness and is slightly and uniformly browned.

deckle: (1) the frame that forms the border of a hand paper mold; (2) the rubber apron that confines the flowing pulp on the screen of a paper machine.

deckled edge: the untrimmed feathered edge of a sheet of handmade paper, created by the pulp that flowed over the frame at the time of drying. These edges are often left untrimmed in fine books, which can be a problem for the conservator when brittleness causes the edges to break. (Deckled edges are very difficult to repair.)

deterioration: the chemical and physical destruction of material in the environment in which it has been placed; the aging process.

diazo (diazotype, diazotypy, white printing): a generic term for films employing light-sensitive diazonium salts for the production of the film image. The image is a dye and thus subject to fading.

disposal: physical destruction of records. See also "disposition."

disposal authority: the legal authorization for the disposal of records obtained from the Archivist of the United States and, for certain series, from the Comptroller General.

disposal list: a document providing one-time authorization for the legal destruction of specified nonrecurring series.

disposal period: see "retention period."

disposition: the actions taken with regard to records following their appraisal. The actions include transfer to a records center for temporary storage, transfer to an archival agency, donation to an eligible repository, image reproduction, or destruction. The term includes but is not synonymous with "disposal."

disposition program: a management system with regard to noncurrent records following their appraisal. The actions include transfer to a records center for temporary storage, transfer to an archival agency, donation to an eligible depository, reproduction on microfilm, and destruction.

disposition schedule: a document governing, on a continuing basis, the mandatory disposition of recurring records series of an organization or agency. Also known as a records schedule, records control schedule, retention schedule, or records retention schedule. See also "records control schedule," "general records schedule."

disposition standard: the time period for the cutoff, transfer to a records center, destruction, or transfer to NARA.

docket: a collection of lands and minerals serialized case records.

doctored: an object that has been repaired, restored, or rebuilt; used in the pejorative sense.

document: (1) recorded information regardless of medium or characteristics. Frequently used interchangeably with record; (2) a single record or manuscript item. When abbreviated, d. or doc., it designates any manuscripts or some printed materials that are not letters. See also "item," "records."

-E-

emergency destruction: eliminating records under abnormal circumstances, as provided by law or regulations.

electrostatic: electricity at rest; a stationary electrical charge on a photoconductive surface used in electrophotographic reproduction, such as xerography.

emulsion: in photography, a single or multi-layered coating of gelatin or other material on a film or paper support carrying light or radio-sensitive chemicals, usually silver halides, that create a latent image upon exposure. When developed, a visible image appears.

enclosures: any material not a part of a book that has been inserted into it.

end paper: the paper placed at the beginning and the end of a book, one half being pasted to the inside of the cover.

evaluation standard: criterion for determining present and future values of records.

evidential value: the value of agency records, which provide documentation of its organization and functioning. Also known as "functional documentation value."

extra binding (fine binding): a trade name in the U.S. denoting the finest quality work. The binding of books by hand in accordance with the traditional techniques of the craft, using the finest materials and the highest standards of quality and workmanship.

-F-

facilitative records: see "housekeeping records."

fibrillae: thread-like elements which make up cellulose fiber. They are partially separated from the fiber wall by the action of the beater-roll in papermaking.

files: (1) an accumulation of records maintained in a predetermined physical arrangement. Used primarily in reference to current records, the term in archival usage may refer to either a series or a file unit, such as a folder or dossier; (2) to place documents in a predetermined location according to an overall plan of classification; (3) in machine-readable records/archives, two or more data records of identical layout treated as a unit. The unit is larger than a data record but smaller than a data system and is sometimes known as a data set; (4) storage equipment, such as a filing cabinet. See also "series."

file break: see "cutoff."

file copy: see "record copy."

files administration: the practical application of filing principles; the performance of the practical work of arranging current records in systematic order for purposes of preservation and reference.

film: a transparent plastic material, usually of cellulose acetate or polyester on which a light-sensitive emulsion is coated, or on which an image can be formed by various transfer processes.

filter: a layer of more or less transparent material used to modify the quality or quantity of radiation (e.g., ultraviolet rays) emitted from light sources.

finding aids: the descriptive media, published and unpublished, created by an originating office, an archival agency, or manuscript repository to establish physical or administrative control over records and other holdings. Basic finding aids include guides (general or repository and subject or topical), inventories or registers, location registers, card catalogs, special lists, shelf and box lists, indexes, calendars, and, for machine-readable records, software documentation.

finish: the general appearance and feel of paper.

fiscal value: the usefulness of records for information about the financial transactions and obligations of agencies and organizations. See also "administrative value."

flexible binding: (1) a style of binding in which the sewing allows the book to open quite flat; (2) a binding, usually of leather, that has no rigid covers and which permits rolling and bending.

flexible glue: an adhesive made of a mixture of glue and another substance, such as glycerine, that keeps it from becoming dry and brittle.

flyleaf: (1) a blank leaf at the beginning or end of a book; the leaf of the endpaper that is not pasted down; (2) bibliographically, a binder's blank, additional to, and following the free front paper.

followup file: a file used as (1) a means of checking on borrowed records and effecting their return to the files, and (2) a reminder to officials of the status of actions which must be completed by a specific date. Also called "suspense file" or "tickler file."

fore edge: the front edge of the leaves of a book; the edge opposite the folds of a section.

forensic value: see "artifact value."

foxing: spots of various sizes and intensity, usually brownish in color, that disfigure paper. They are caused by a combination of fungi, paper impurities, and dampness.

Freedom of Information Act (FOIA): a law providing that all records of Federal government agencies must be accessible to the public unless specifically exempted. There are nine exemptions that permit an agency to withhold access to records, e.g., classified national defense information, trade secrets and privileged or confidential commercial/financial information, personal and medical files, etc.

full binding (whole binding): the binding of a book completely in one material; traditionally, the term is used to refer to leather bindings.

functional documentation value: see "evidential value."

-G-

gathering (quire, section): a term applied to each unit of folded leaves comprising a book. The group of leaves formed after the printed sheet has been folded to the size of the book and before it is combined in proper order with other gatherings for binding.

general records schedule: a schedule, issued by NARA, governing the disposition of specified recurring series common to several or all agencies. The use of this schedule is mandatory.

generation: a term used for the printing of copies from copies. It is the measure of remoteness of a particular copy from the original material. For example, a negative of the original material is called the first generation, as it is one generation away from the original. Copies made from the negative are second generation prints.

glassine: a dense, semi-transparent paper not easily penetrated by air. It is usually acidic.

grain: the direction in which most of the fibers lie in a sheet of machine-made paper.

gutter (back margins): the two inner margins of facing pages in a book.

-H-

half binding: a bookbinding with leather spine and outer corners and cloth or paper sides. The leather of the back usually extends about 1/4 to 1/3 of the distance of the front cover.

headband: a small ornamented band of cotton or silk placed at the head or tail of a volume between the cover and the backs of the folded signatures.

hinges: (1) the inside junctions of the sides of the binding with the spine or the joint on the outside; used interchangeably; (2) paper or muslin stubs or guards that permit the free turning of an insert, leaf or mat.

historical value: the usefulness of records for historical research concerning an agency for information about persons, places, events, or things. See also "scientific and technical records."

holding area: agency space assigned for the temporary storage of active or semiactive records and for records with relatively short retention periods. Also known as a "staging area."

housekeeping records: records of an organization that relate to budget, fiscal, personnel, supply, and similar administrative or facilitative operations normally common to most agencies, as distinguished from program or substantive records that relate to an agency's primary functions. See also "program records."

humidity: see "absolute humidity" and "relative humidity."

hydration: in paper, when the chemical components in paper are combined with moisture and the paper expands.

hydrolysis: the decomposition of organic compounds, such as paper, by the interaction of water. The presence of acid or alkali ions hastens the process.

hygrometer: an instrument used to measure the relative humidity of the atmosphere.

hygroscopic: a term applied to a substance, such as paper, that can pick up moisture from the air and also release moisture into the air.

hypo (fixer, fixing bath): originally an abbreviation for sodium hyposulfate, but now used to refer to sodium thiosulfate, the chemical agent used in fixing baths to remove unexposed silver halides from silver emulsion film. It is also more generally used to refer to a fixer solution which may also contain certain acids and/or hardening agents.

-I-

image (photographic print): a physical representation of perception or thought, or an object. In photography, the representation of an object or information sources produced by light rays. In contemporary usage, synonymous with photographic print, e.g., "I have a number of images by Edward Weston in my collection."

inactive records: see "noncurrent records."

India paper (Bible paper, Oxford India Paper): a strong, lightweight opaque book paper used where low bulk is important, as in Bibles and encyclopedias.

informational value: the value of records that derive from the information they contain on matters with which public agencies deal, rather than from the information that is in such records on the agencies themselves. See also "administrative value," "evidential value."

ink erosion: damage that occurs when ink products such as iron-gall ink, which is acidic, attacks the paper in the center of the penstrokes where it is concentrated and destroys the paper under the ink.

insert (inset): a folded section of paper placed within another, completing a sequence of pagination; an extra page or set of pages inserted in a book; an illustration, map or other document produced separately from the body of a book, but bound in it.

intaglio printing: a technique in which the areas to be printed are cut into a plate, so that when the plate is inked and then wiped, the depressed areas will retain the ink.

interleaves: blank leaves that alternate with the printed leaves of a book.

inventory: a survey of files prior to the development or revision of records control schedules. Generally includes such data as series title, inclusive dates, use, volume, arrangement, duplication, and other pertinent information.

item: a separately numbered entry describing records on an SF 115 (Request for Records Disposition Authority).

-J-

jacket: (1) a transparent plastic carrier with single or multiple pockets to hold microforms in flat strips; (2) a container, usually made of cardboard, to hold phonograph records.

Japanese paper: a very absorbent high-quality paper made from plant fibers and used for printing works of art on paper, for expensive editions of books, and also for some bindings.

job bindery: a bindery that specializes in binding or repairing small lots of books.

joints: (1) the groove forming the outside junctions of the side of a binding adjacent to the spine of a book; (2) reinforcements applied to the end linings or end sections of a book to strengthen the binding.

-K-

kozo: papers made from the inner bark of the paper mulberry trees native to Asia. The long fibers in these papers make them ideal for mending documents.

Kraft paper: a tough, strong paper or board containing unbleached woodpulp (brown in color).

-L-

laid lines (wire mark, wire lines): the close-set lines in laid paper, made by the wire mesh in the bottom of the frame. The lines are distinguishable parallel wires crossed at right angles by other wires set at a wider interval, which are called chain lines (see).

laid paper: paper showing the wire lines of the hand papermaker's mold, or watermarked by devices on the dandy roll used in the process of machine manufacture.

lamination (silking): (1) the repair of fragile papers by reinforcing them on both sides with a thin transparent textile or plastic fabric; (2) the fusing of sheets of protective film to the sides of paper by means of heat and pressure.

legal value: the use of records containing evidence of legally enforceable rights or obligations of governments and/or private persons.

library binding: (1) binding done by commercial library binders according to set specifications; (2) the process used in producing such a binding.

light-sensitive: materials which undergo changes when exposed to light. The commonly used photographic light-sensitive materials used in films and papers are the silver halides, diazo dyes, biochromated gelatin and the photoconductive materials used in Xerography. With most photographic materials, the changes are not apparent until the material is developed.

light stain: discoloration on paper caused by overexposure to any light source, particularly light energy sources with heavy ultraviolet energy.

lignin: an acid organic substance found in wood pulp. It is removed in the chemical pulping process, but is not removed in the manufacture of low grade papers made of ground wood pulp, such as newsprint.

lining: various layers of cloth, paper, or leather that are pasted down on the back of a book, after it has been sewn and backed, to reinforce the sewing and hold the signatures together. The operation of placing these materials on the backbone is usually referred to as "lining up."

-M-

machine-made paper: paper made by machine rather than by hand; it may be of any quality, depending upon the materials and processes used to make it.

machine-readable records/archives: records and archives whose informational content is usually in code and has been recorded on magnetic disks, drums, tapes, punched paper cards, or punched paper tapes, accompanied by finding aids known as software documentation. The coded information is retrievable only by machine.

magnetic tape: a ribbon of paper, metal, or plastic, coated or impregnated with magnetic material, upon which information may be stored in the form of magnetically polarized areas.

manuscript: a handwritten or typed document, including a letterpress or carbon copy. A mechanically produced form completed in handwriting or typescript is also considered a manuscript.

maps and charts: graphic representation at a reduced scale of selected physical and cultural features of the surface of the earth and other planetary bodies. These may include topographical quandrangles, cadastral plans, charts (hydrographic, nautical, weather, and aeronautical), photomaps, cartograms, globes, and relief models.

marbling: coloring sheets of paper or the edges of books by touching the paper or bookedges to patterns of color floating on water.

margin: (1) the area beyond the printed matter in a drawing, fine print, or printed book or document; (2) in microfiche, the non-image area outside the margins of the document but within the frame.

master copy: an original document or film, or a copy of a document or film from which copies can be made.

master film (master negative): any film used to produce further reproductions as intermediate or distribution copies.

mending: the act of repairing torn pages and sections of a book; less than restoration.

microcopy: a copy of an image obtained by photography in a size too small to be read without a device for magnification.

microfiche: a sheet of microfilm containing multiple micro-images in a grid pattern. The most common size produced today is the 105mm. x 148mm.

microfilm: (1) a transparent flexible film used for the photographic reproduction of documents in reduced size; (2) photographic reproductions on this film that can be viewed with a reading device or enlarged to make readable prints.

microform: the generic term for any format, usually film, which contains microimages.

micrographic system: an information system that utilizes the special advantages of microimaging to save space, to allow for automatic retrieval and reproduction, and to preserve the stored information.

micrographics: (1) the use of microimage recording, retrieval, and reproduction techniques in an information system; (2) the industry that reduces any form of information to a microform medium.

microimage: an image of information too small to read without magnification.

microphotography: the photographic recording of documents at a substantial reduction in size.

moisture content: the percent of moisture found in finished paper. The amount varies according to atmospheric conditions because paper is hygroscopic (see).

mottle: a defect in photographic prints that have been underdeveloped, in which the density is not uniform and gives the print a mottled effect.

mounted: refers to printed matter or illustrations that have been pasted down or lightly attached to a leaf or mat; can also refer to damaged leaves which have been laid down upon or backed with paper.

museum board: originally 100 percent rag fiber board used for matting printed works for framing. It now includes high-grade acid-free paperboard manufactured from highly refined wood pulp.

mylar: a Du Pont trade name for a clear, flexible polyester plastic sheet which is often used to cover prints.

-N-

negative film: film in which the image of the dark portions of the original appear light and the light portions appear dark. Positive copies can be made from these negative images.

newsprint: a generic term used to describe paper of a type generally used in the publication of newspapers. It is made mostly from groundwood pulp and small amounts of chemical pulp.

noncurrent records: records that are no longer required in the conduct of current business and therefore can be transferred to a records center, offered to an archival repository, or destroyed. See also "current records," "semicurrent records."

nonrecord material: material excluded from the definition of records, such as unofficial copies of documents that are kept only for convenience or reference, stocks of publications and processed documents, blank forms, and library or museum material intended solely for reference or exhibition.

-O-

office of record: an office designated as the official custodian of records for specified programs, activities, or transactions of an organization.

official files: an accumulation of official records documenting an action or providing valuable information. Official files include the originals of incoming correspondence and the initialed copies of outgoing and interoffice correspondence, the original and action copies of reports, completed forms, maps, photographs, and other documents.

opacity: the property which minimizes the transparency of paper and thus the ability to see the image from the back side of the sheet or the image on the next sheet. This is especially important on thin papers used for the printing of books.

opaque screen: a microform reader screen of opaque material on which an image is produced by reflected light.

operation, contractual, and financial records: records containing the detail of current operations and transactions. Their current value usually ends within a specified time after the operation or transaction is completed. Certain basic financial and operational records have extended or permanent historical value, as do certain contract records.

oversewing: sewing by hand or machine through the edge of each section of a book, in consecutive order, using perforated holes through which the needle passes. This is the principal means of securing the leaves of books in a library binding.

oxidation: the reaction of a substance with oxygen; chemical changes that weaken paper as a result of the reaction of paper pulp and other papermaking substances with oxygen.

-P-

paper: a thin tissue of fibrous material which is suspended in water and then matted into sheets by dipping screens into the water suspension and lifting the fibers out. The fibers bind together to form a sheet of paper.

paper loss: absence, in any degree, of an area of original paper.

paperwork management: see "records management."

perfect binding (adhesive binding): a method of holding pages of a book together with glue using no stitching or sewing. The backbones of the gathered books are ground off, leaving a rough surface to which adhesive is applied. The books are usually finished with a wrap-around cover.

permanence: lasting or intended to last indefinitely without significant change; a one percent change in one hundred years.

permanent records: records appraised by NARA as having enduring value because they document the organization and functions of the agency that created or received them and/or because they contain significant information on persons, things, problems, and conditions with which the agency dealt. See "archives."

personal files: accumulations of papers, maps, photographs, or other documentary materials which belong to an employee. Such files are destroyed or taken by the employee when he/she is transferred or terminated.

pH value: A measurement, or numerical expression, which tells if paper is acidic or alkaline. Seven is neutral on a scale ranging from 0 to 14; each whole number above or below 7 represents a ten-fold change. A solution with a value below seven is acidic; above, it is alkaline.

photographic records/archives: records or archives that take the form of pictures or photographs, sometimes with related textual records.

physical custody: see "custody."

point system: a numerical system for the measurement and description of type. A point is equal to approximately 1/72 of an inch.

polarity: a word used to indicate the change or retention of the dark-to-light relationship of an image. See also "negative film," "positive film."

polyester: (1) transparent plastic used as a film base because of its transparency, stability, and relative nonflammability; (2) also used to make protective sleeves and envelopes for prints under the trade name of Mylar. See "mylar."

porosity: the minute openings between paper fibers through which air and light might pass.

positive: a photographic image on paper, film, or glass which exactly corresponds to the original subject in all details.

positive film: (1) film in which the image of the dark portions of the subject appear dark and the light portions appear light; (2) film used for making contact prints, usually blue-sensitive only. See also "negative film."

preservation: (1) the basic responsibility to provide adequate facilities for the protection, care, and maintenance of archives, records, and manuscripts; (2) specific measures, individual and collective, undertaken for the repair, maintenance, restoration, or protection of documents.

Privacy Act: a law providing that no agency shall disclose any record that is contained in a "system of records" (see) by any means of communication to any person, or to another agency, except pursuant to a written request by, with the prior written consent of, the individual to whom the record pertains. However, disclosure of a record without a written request or consent is provided for by both general and specific exceptions written into the Act.

program records: records created or received and maintained by an agency in the conduct of the substantive functions for which it is responsible. The term is used in contrast with housekeeping or facilitative records. See also "housekeeping records."

project file: a type of case file that contains records relating to an assigned task or problem. See also "case file."

psychrometer: an instrument for determining relative humidity in which wet and dry-bulb temperature readings are compared with a chart that shows relative humidity.

public records: (1) in general usage, records accumulated by government agencies; (2) records open to public inspection by law or custom.

pulp: the preliminary raw material of ground-up fibers from which paper is made.

-Q-

quarter bound: a book with a leather spine having its sides covered entirely with cloth or paper.

quire: (1) a term used to refer to a gathering or section of a book. See "gathering;" (2) a standard parcel of paper, a printer's quire being 24 sheets.

-R-

rag content: a term that indicates the presence of cotton or linen rag fibers in a sheet of paper. The content may vary from 25 percent to 100 percent.

raised bands: ridges on the spines of finished books caused by the horizontal cords upon which sections of a book are sewn. Raised bands appear on the case when these cords have not been embedded in the body of the book.

reader: a projection device for viewing an enlarged microimage with the unaided eye.

reader-printer: a machine that combines the functions of a reader and an enlarger-printer.

reading file: a file containing copies of documents arranged in chronological order. Sometimes known as a chronological file or a day file.

ream: a standard parcel of paper, formerly 20 quires, or 480 sheets, now usually 500 sheets.

re-backed: a term used when the binding of a book has been given a new back, or spine.

rebinding: the rehabilitation of a worn volume, including putting on a new cover.

recased: a book that has been replaced in its cover after it has loosened or come out (Fr. Remboitage).

record copy: the official or record document that is so marked or recognized, complete with enclosures or related papers. Also known as "file copy."

record group: a body of organizationally related records established with regard to the administrative history, the complexity, and the volume of the records of the organization involved.

record series: see "series."

records: all books, papers, maps, photographs, machine-readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the U.S. Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of data in them. Library and museum material made or acquired and preserved solely for reference exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and of processed documents are not included in this definition of "records."

records center: a facility for the economical storage and servicing of records pending their ultimate disposition.

records control schedule: a document governing, on a continuing basis, the mandatory disposition of recurring records series of an organization or agency. Also known as a records schedule, retention schedule, or records disposal schedule.

records disposition: see "disposition."

records management: that area of general administrative management concerned with achieving economy and efficiency in the creation, use, and maintenance and disposition of records. Includes fulfilling archival requirements and ensuring effective documentation. Also called "paperwork management."

records manager: the person responsible for or engaged in a records management program. In BLM, the records manager has overall responsibility for all records in his/her office's area of responsibility.

records officer: the person officially designated to be responsible for administering the policies, procedures, and standards of the records management program within the office or bureau. BLM's records officer is the Chief, Branch of Records Management (WO-771).

records retention schedule: see "records control schedule."

records retirement: see "records control schedule."

records schedule: see "records control schedule."

reduction: (1) a measure of the number of times a given linear dimension of an object is reduced when photographed, expressed as 16X, 24X, etc.; (2) decreasing the optical density of a photographic image using chemical or other means.

reduction ratio: the relationship between the dimensions of a microimage and the corresponding dimensions of the original master. It is expressed as either 16:1, 20:1, etc., or as 16X, 20X, etc.

relative humidity: the ratio of the quantity of water vapor present in the air to the quantity which would saturate that air at any given temperature. The figure is arrived at by relating the amount of water vapor a special volume of cold air could support without reaching dew point at the given temperature to the amount it currently has.

repairing: partial rehabilitation of a worn volume.

repository: a place where archives, records, or manuscripts are kept. The word "depository" is sometimes used as a synonym for repository.

reproduction: the act of copying or duplicating a document.

reprography (photoreproduction, photoduplication): a term used to refer to the processes and methods used for both copying and duplicating documents and photographs.

research value: see "scientific and technical records."

reset: (1) to reset type for a new leaf or edition; (2) recased; (3) refers to leaves that have been stuck back into a book with paste after they have come loose. See "tipped in."

resewing: the process of taking the volume out of its covers, removing the old sewing, and sewing anew; resewn books are frequently replaced in their original covers.

resolution: the ability of optical systems and photomaterials to render visible the fine detail of an object; a measure of the sharpness and clarity of an image. It is often expressed in lines per mm.

restoration: the procedures that improve the condition of a damaged object and attempt to return it as closely as possible to its original condition.

retention period: the length of time, based on an event or a chronological period, during which a series is retained before its authorized disposal.

retention schedule: see "records control schedule."

retirement: transfer of semicurrent and noncurrent records to a records center or some other authorized depository for storage.

rice paper: a misnomer for the paper made from the pith of the rice paper tree found in the far east. It is often erroneously called India Paper.

roll microfilm: a length of microfilm on a reel, spool, or core.

rosin: the additive most commonly used for the sizing of paper.

-S-

saddle stitching: the stitching together of double leaves inserted one within the other, with the wire passing through the volume at the fold line.

sampling: selection for retention of part of a body of similar records to serve as a representation of the whole body.

sawing in: making grooves in the back of an unbound book with a saw to receive the bands for binding.

scientific and technical records: data, computations, and descriptions of processes for research, development, planning, design, construction, and operation relating to lands or minerals matters and dealing with developing and conserving resources and other related or special assignments undertaken by the Bureau. These records frequently are used for continuing research, planning, design, and other activities which require their extended retention.

screen: the examination of records to determine the presence of documents eligible for destruction and the removal of such documents from the files.

security-classified records: see "classified information."

selective retention: see "appraisal."

semicurrent records: records required so infrequently in the conduct of current business that they should be moved to a holding area or directly to a records center. See also "current records," "noncurrent records."

sensitive (the new **Departmental and OMB definition**): "Information or data that requires protection due to the risk and magnitude of loss or harm which would result from inadvertent or deliberate disclosure, alteration, or destruction. The term includes information or data whose improper use or disclosure could adversely affect the ability of an agency to accomplish its mission, proprietary data, records about individuals requiring protection under the Privacy Act, and data not releasable under the Freedom of Information Act."

The following types of information should be thought of as sensitive:

a. Information prohibited from release by statute.

b. Information submitted to the government in expectation of confidentiality; confidentiality is required in order to prevent substantial competitive harm or to ensure the government's ability to obtain like information in the future.

c. Information gathered by the government under the requirements of law or for the purpose of evaluating any facet of the resource programs and capable of causing substantial competitive harm to persons, organizations, corporations, etc., about whom the information is gathered.

d. Information created by the government in its own interest for the purpose of gaining full value for its resources or for protecting those resources from exploitation (e.g., endangered species habitat and paleontological resources information).

e. Information about individuals requiring protection under the Privacy Act.

f. Information or data that is mission critical to an agency. The loss, alteration, destruction, or improper use of this information or data could adversely affect the ability of an agency to accomplish its mission.

series: file units or documents arranged in accordance with a filing system or maintained as a unit because they relate to a particular subject or function, result from the same activity, have a particular form, or have some other relationship arising out of their creation, receipt, or use. Sometimes known as a record series.

sewed: a pamphlet stitched without covers.

sewing: in bookbinding, the fastening of sections together, one at a time, by means of a needle and thread, until the whole book is fastened together.

shaved: a term used when the binder has trimmed off the whole margin of a leaf and touched ink, but has not actually cut off more than the outer edge of any printed letters.

sheet: a printer's unit; the full size of the paper when printed, forming a section of a book when folded.

shelf-life: the period of time before deterioration renders material unusable.

side stitching: the stitching of sheets or signatures along the bind edge (generally the left or top margin) using wire. The wire passes through the entire thickness of the document.

silver halide: a compound of silver and one of the following elements known as halogens: chlorine, bromide, iodine, or fluoride. Film coated with an emulsion of this compound is said to be of "archival quality."

size: a glutinous or viscous wash used in the preparation of many papers that imparts water-resistant qualities to the paper.

slide: see "transparency."

slide mounter: a device for converting positive transparent images into slides for projection.

source documents: documents providing input data for machine-readable records systems.

staging area: see "holding area."

stitching: as distinguished from sewing in bookbinding, the fastening together of leaves with thread or wire, each stitch of which passes through the entire volume. Wire stitching frequently involves using staples.

substantive records: see "program records."

sulfate process: an alkaline process used to make pulp from wood chips.

sulfite process: (1) an acid process used to make pulp from wood chips; (2) pulp cooked by this process.

suspense file: see "followup file."

system of records: a group of any records under the control of any agency from which information is retrieved by the name of an individual or by some identifying number, symbol, or other identifying particular assigned to the individual (Privacy Act).

-T-

tailband: see "headband."

target: a sign or note photographed on a film preceding or following the document being microfilmed to provide the user with bibliographic or corrective information.

technical records: see "scientific and technical records."

tensile strength: the ability of a sheet of paper to withstand tension.

textual records/archives: the term usually applied to manuscript materials, as distinct from cartographic, audiovisual, and machine-readable records and archives.

three-quarter binding: binding in which the leather back extends well over the sides, and with leather corners. The leather on the back and the leather at the corner almost meet.

tickler file: see "followup file."

tipped in: separately printed illustration, map, etc., cut to the page depth size of the leaf of a book and pasted along the inner margin of the appropriate text page prior to gathering. Such an illustration is called a "paste in."

tissue paper: thin, almost transparent, paper used to cover the face of an engraved or etched illustration to prevent the off-set of the ink onto the opposite page. This paper is usually highly acidic.

toner: (1) the material employed to develop a latent xerographic image; (2) in photography, a compound used to impart a color to a developed black and white silver image.

transaction file: see "case file."

transfer: the movement of records out of office space and equipment to a depository.

transitory records: a general term for those types of records that lose their value within a short period of time and that should be separated during filing from records requiring longer retention.

transparency (slide): an image, usually positive, intended to be observed by light that passes through the image and base as on a viewer or by projection.

trimmed: refers the edges of a book where only the edges of the larger leaves have been cut; the edges are thus roughly leveled rather than smooth.

-U-

ultrafiche: microfiche with images reduced by more than 90X.

ultraviolet: pertaining to the electromagnetic energy, invisible light, immediately beyond the blue end of the visible spectrum.

uncut (untrimmed): refers to the edges of a book where the text sheets have not been trimmed in any way.

underexposure: insufficient exposure of sensitized material due to insufficient illumination, exposure time, or lens aperture, resulting in a deficient image.

unopened: a book with folded edges that have not been sliced open so that its component sections are still intact at the top of fore-edges.

unpressed: a book that has not been to the binder's press, so that the paper preserves its original briskness of texture.

unscheduled records: records for which no disposition authority exists.

untrimmed: see "uncut."

-V-

valuation: see "appraisal."

vesicular film: a generic term used for film which has the light-sensitive element suspended in a plastic layer. Upon exposure it creates strains within the layer in the form of a latent image. The strains are released and the latent image made visible by heating the plastic layer. The image becomes stable when the layer cools.

vital records: records essential for maintaining the continuity of government activities during a national emergency. Consists of two categories: (1) emergency operating records; and (2) rights and interests records (see Manual Section 1273 for further explanation).

-W-

washing: (1) in regard to paper, refers to using a bath of distilled or deionized water to remove stains and other blemishes. Treated thus, the paper will require a new size bath; (2) in photography, refers to washing prints and films with water to remove residual processing chemicals; such chemicals will cause image deterioration if they remain in the photograph.

water stain: discoloration of paper caused by direct contact with fluids or excessive humidity.

watermark: the mark made within a sheet of paper by a raised design on the screen of a paper mold, which serves as the mark of the papermaker. It may be seen by holding the paper up to the light.

wood pulp: a substance used for paper-making obtained from trees of various kinds. The process of manufacture includes two distinct classes: (1) mechanical wood pulp or ground wood from which newsprint is made, and (2) chemical pulp produced by various methods to obtain a higher grade paper.

working papers: (1) documents such as rough notes, calculations, or drafts assembled or created and used in the preparation or analysis of other documents; (2) protective papers used by the preservationist while restoring documents and books.

wormholes: the holes made by the larvae of certain insects in paper and in the boards and leather of bookbindings.

wove paper: paper with an even granulated texture, usually made on a continuous close-meshed wire belt. Wove paper does not have wire marks.

-X-

xerography: a generic term for the formation of a latent electrostatic image by action of light on a photoconducting insulating surface. The latent image may be made visible by a number of methods.

Form 1273-3
(March 1988)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DISASTER RECOVERY RECORD ASSESSMENT

OFFICE # 208
DIVISION # WO-771
FLOOR # 208

AREA
☑ Open space-OS
☐ Closed room-CR

STORAGE/USE
☐ Open Shelves
☑ Closed Shelves
☐ Desk/table

PROTECTION
☑ Water sprinklers
☐ Fire extinguishers
☑ Alarms
☐ heat ☑ smoke ☐ water

Prepared by Headley
Date March 1, 1988
Sheet 1 of 1 sheets

LOCATION	RECORD TYPE	RECORD VALUE			RECORD FORM			SECURITY BACKUP							Replace		Reconstruct		Salvage		Time	Cost
		High	Medium	Low	Original	Copy	Microfilm	Yes	No	Original Only	Paper Copy	Microform Original	Microform Duplicate	Computer	Yes	No	Yes	No	Yes	No		
SW Corner	Casefile	✓					✓	✓					✓		✓						1HR	20.00

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*
Starpro Plus Developer

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Eastman Kodak Company	Emergency Telephone Number (716)722-5151
Address *(Number, Street, City, State, and ZIP Code)* 343 State Street, Rochester, New York	Telephone Number for Information (714) 723-1515
	Date Prepared 2/29/87
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*
Hydroquinone		2 mg/m^3		1-5

Section III — Physical/Chemical Characteristics

Boiling Point 100 C (212 F)		Specific Gravity (H_2O = 1) (H_2O= 1): 1.10	1.10
Vapor Pressure (mm Hg.) 18 mmHg @20 C		Melting Point	
Vapor Density (AIR = 1) (Air = 1): 0.6		Evaporation Rate (Butyl Acetate = 1) (n-butyl acetate= 1)	0.36

Solubility in Water
Complete

Appearance and Odor
Clear, Light yellow; Odorless

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) None	Flammable Limits	LEL	UEL

Extinguishing Media
Not Applicable

Special Fire Fighting Procedures
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes

Unusual Fire and Explosion Hazards
Fire or excessive heat may cause production of hazardous decomposition products.

(Reproduce locally)

OSHA 174, Sept. 1985

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	XX	

Incompatibility (*Materials to Avoid*) Mineral acids

Hazardous Decomposition or Byproducts Sulfur dioxide

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	XX	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? Ingestion?

Health Hazards (*Acute and Chronic*)

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure

Medical Conditions Generally Aggravated by Exposure

Emergency and First Aid Procedures

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Flush to sewer with copius amount of water.

Federal, State, and Local effluent laws take precedence

Waste Disposal Method

Flush to sewer with copius amount of water

Federal, State, and local effluent laws take precedence

Precautions to Be Taken in Handling and Storing

Other Precautions

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) None should be eeded

Ventilation	Local Exhaust None should be needed	Special
	Mechanical (*General*) Recommened	Other

Protective Gloves None	Eye Protection None

Other Protective Clothing or Equipment

Work/Hygienic Practices Good industrial hygiene practice should be followed

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

ARTICLES

Eastman Kodak Co., Treatment of Flood Damaged Film, Correspondence, Rochester, N.Y., Sept. 20, 1985.

Ernst, R.R. & Shull, J.J., Ethylene Oxide Gaseous Sterilization, Wilmot Castle Co., Rochester, N.Y., Feb 1962.

Gilbert, Vernon, Gambill, Spiner, Hoffman & Phillips, Effect of Moisture on Ethylene Oxide Sterilization, Applied Microbiology, Vol 12, No. 6, p. 496-503 Nov 1964.

Opfell, Wang, Louderback, and Miller, Penetration by Gasses to Sterilize Intersurfaces of Confined Spaces, Applied Microbiology, Vol 12, No.1, p. 27-31, Jan 1964.

Ostroff, Eugene, Rescuing Nitrate Negatives, Museum News, Smithsonian Institution.

Wessel, Carl J., Environmental Factors Affecting the Permanence of Library Materials, The Library Quarterly.

BOOKS

Z 701 A55	ALA Library Technology Project, Protecting the Library and its Resources, Chicago, 1963.
Z 247 B36	Barrow, Permanence and Durability of the Book, 3 volumes, Richmond, 1963-7.
Z 701 B65	Bohem, Hilda, Disaster Prevention and Disaster Preparedness, Berkeley, California, Univ. of Cal., April 1978.
Z 110 C7 B3 1972	Clapp, Ann, Manuscripts and Documents, Charlottesville, 1972. Curatorial Care of Works of Art on Paper, Oberlin, Ohio, 1974.
655.72 C666b2	Cockerell, D., Bookbinding and Care of Books, London, Pitman, 1953.
	Conservation of Prints, Drawings and Manuscripts, New York and London, Oxford, 1937.
Z 701 C782 or C78	Cunha, G., Conservation of Library Materials, Scarecrow, Metuchen, N.J., 1967, 1971.

ISBN 0-933887-17-5	Eulinberg, Julia N., Handbook for the Recovery of Water Damaged Business Records, Prairie Village, KS, ARMA International, 1986.
	Guldbeck, Per, Care of Historical Collections, Nashville, 1972.
	Horton, Caroline, Cleaning and Preserving Bindings and Related Materials, Chicago, Library Technology Project, ALA, 1969.
	Johnson, Arthur W., Manual of Bookbinding, N.Y., Scribners, 1978.
Z 110 C7 K35 K	Kathpalia, Y.P., Conservation and Restoration of Archive Materials. Paris, UNESCO, 1978.
Z 271.K65 and/or 655.72 K655b	Klinefetter, Lee, Bookbinding Made Easy, Milwaukee, 1960, 2nd ed. 1972.
	Langwell, W., The Conservation of Books and Documents, London.
LC-57-13426	Lewis A.W., Basic Bookbinding, New York, N.Y., Dover, 1957.
	Lydenberg, Archer and Alden, Care and Repair of Books, New York, Bowker, 1960.
	Minogue, Adelaide, The Repair and Preservation of Records, Washington, D.C., National Archives, 1960.
Z 701 M547 1982	Morrow, Carolyn, C., The Preservation Challenge, Knowledge Industry Publications, White Plains, N.Y., 1983.
N8560 P55 1971 or 62 or 56	Plenderleith, H.J., Conservation of Antiquities and Works of Art, Oxford, 1962 (reprint) 2nd ed. 1971.
Z 272 P67	Preservation of Leather Bookbindings, London, British Museum, 1946.

Z 701 C 586 1983	Swartzburg, Susan G., Conservation in the Library, Greenwood Press, Westport, Conn., 1983.
Z 701 S92	Swartzburg, Susan G., Preserving Library Materials, Scarecrow Press, Metuchen, N.J., 1980.
655.72 T 743b 1963	Towne, Laurence, Bookbinding by Hand for Students and Craftsmen, London, 1963.
	Tribolet, Harold, Rare Book and Paper Repair Techniques, AASLH, Technical Leaflet #13, rev. 1970.
	Wardle, D.B., Document Repair, London, Society of Archivists, 1971.
Z 701 W37	Waters, Peter, Procedures for Salvage of Water Damaged Materials, Washington, D.C., 1975, 1979.
	Wessel, Carl J., (Winger, H. & Smith, Editors) Deterioration and Preservation of Library Materials, Chicago, 1970.
	Williams, John C., ed., Preservation of Paper and Textiles of Historic and Artistic Value, Washington, D.C., American Chemical Society, 1977. (Advances in Chemistry, Series #164).

BULLETINS

ISBN 0-9692041-0-8	Barton & Wellheiser (Editors), An Ounce of Prevention, Toronto Area Archivists Groupe, Toronto, Ontario, Canada, 1985.
	Bulletin No. 68, How to Prevent and Remove Mildew, USDA, Washington, D.C., Sept 1976.
	Federal Agency Emergency Situations Plan, Federal Executive Board, GSA, Washington, D.C., Oct. 1985.
	Frey, R.W. & Veitch, F.P., Leaflet No. 69, Preservation of Leather Bookbindings, USDA, Washington, D.C., April 1932.

Z 701 .H29 1981	Harrison, Alice W., *The Conservation of Library Materials*, Dalhouse University, Halifax, Nova Scotia, 1981.
	Iiams, T.M. & Beckwith, *Notes on the Causes and Prevention of Foxing in Books*, The Library Quarterly.
LC 63-17991	Library Binding Institute, *Library Binding Handbook*, Boston, Mass 1971.
	Library Binding Institute, *Standard for Library Binding*, Boston, Mass, 1981.
	Planning Guide and Checklist for Hazardous Materials, FEMA-10, Washington, D.C., July 1981.
	State and Local Emergency Operations Plans Guide, FEMA, CPG 1-8A, Washington, D.C., Oct. 1985.
TP 9.46 .U5 1932	Waters, C.E., *Circular No. 400 -- Inks*, U.S. Dept. of Commerce, U.S. Bureau of Standards Washington, D.C., 1933.

PHOTOGRAPHY

ISBN 0-87985-352-2	Eastman Kodak Co., *Conservation of Photographs*, Rochester, New York, 1985.
	Eastman Kodak Co., *Treatment of Flood Damaged Film*, Correspondence, Rochester, N.Y., Sept. 20, 1985.
	Mackay, Neil, *The Hole in the Card*, St. Paul, Minn., 3M, 1966.
	Orraca, Jose, *Caring for Your Photographic Collections*, *Seminar*, Rocky Mountain Regional Conservation Center, Univ. of Denver, Denver, Colo., August 1985.
	Ostroff, Eugene, *Rescuing Nitrate Negatives*, Museum News, Smithsonian Institution.
TR 400.R44 772:1 LC 80-14340	Reilly, James M., *The Albumen & Salted Paper Book*, Rochester, New York, Light Impressions, 1980.

REPORTS

Z 701 C67 1977 — Martin, John H., (Editor), The Corning Flood: Museum Under Water, Corning Museum of Glass, Corning, N.Y., 1977.

EPA, A Review of Air Pollutant Damage to Materials, U.S. Environmental Protection Agency, report EPA-600/8-82-016, Washington, D.C., June 1982.

Federal Fire Council, Salvaging and Restoring Records Damaged by Fire and Water, Recommended Practices #2, RP-2, Washington, D.C., March 1963.

Industrial Civil Defense, Protection of Vital Records, FG-F-3.7, DOD Office of Civil Defense, Washington, D.C., 1966.

Lindquist, Eric G., Salvage of Water Damaged Books and Documents, Document Reprocessors of San Francisco, San Francisco, CA., Jan 1986.

NBSIR 74-498(R) — Parks, E.J. and Wilson, W.K., Evaluation of Archival Stability of Copies From Representative Office Copying Machines, Interim Report, U.S. Department of Commerce, National Bureau of Standards, Washington D.C., April 30, 1974.

Roadway, Sherry, FARC Region 8, Disaster Emergency Plan, (Draft) NARA, Denver, Colo, 1982.

Zimmerman, E.W., Weber, C.G., Kimberly, A.E., Relation of Ink to the Preservation of Written Records, Research paper RP 779, U.S. Dept. of Commerce, N.B.S., Washington, D.C., April 1935.

REPORT/BULLETIN

HF 5736
T 34
1983

Aschner, Katherine, Taking Control of Your Office Records, Knowledge Industry Publications Inc., 1983.

Buchanan, Sally, The Stanford-Lockheed Meyer Library Flood Report, Stanford, California, Stanford University Libraries, May 1980.

Hennig, Volker R., Handling and Storage of Computer Tape, 3M Company, St. Paul, Minn., 1984.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D 778-50 (Reapproved 1971), Hydrogen Ion Concentration (pH) of Buffered Paper Extracts.

ASTM D 3458-75 Copies from Office Copying Machines for Permanent Records.

ASTM D-3460-79 White Watermarked Bond and Unwatermarked Bond, Mimeograph, Duplicator, and Xerographic Out-Sized Office Papers.

ASTM D-3208-81 Manifold Papers for Permanent Records.

ASTM D-3290-81 Bond and Ledger Papers for Permanent Records.

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

FEDERAL SPECIFICATION

SS-P-166D	Mar. 10, 1961	Pencils, Lead.
UU-P-561H	Dec. 12, 1972	Paper, Tracing.
SS-P-166D	Jan. 8, 1974	Pencils, Lead (Interim Amendment 7).
TT-I-528C	Mar. 19, 1974	Ink, Drawing, Waterproof, Black.
TT-I-528C	Mar. 5, 1976	Ink, Drawing, Waterproof, Black (Amendment).
L-P-519C	July 1977	Plastic Sheet: Tracing, Glazed and Matte Finish.

LIBRARY OF CONGRESS INFORMATION BULLETIN

May 29, 1981	Appendix II LC Statement on Paper Durability.
Mar. 17, 1986	Engineering Problems Experienced at Test Facility.
July 7, 1986	Book Deacidification Program Moves Forward.
Aug. 4, 1986	Preservation Data Elements for USMARC.

PROPOSED

Proposed Guidelines - Floppy Diskette Data Recovery - Whitehead, Janet C., ARMA International - 1985.

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

EMERGENCY CHECK LIST AND INFORMATION PACKET

Having a disaster recovery checklist close at hand is important because a disaster, any disaster, can upset an individual to the point that he/she will not be able to function. The less a person is prepared, the greater the initial shock.

Once a local disaster recovery plan has been written, prepare a checklist with references (page and paragraph) to the textual material of the plan in a simple step-by-step format that outlines the recovery procedures. Being aware of and having the use of the checklist provides a kind of security blanket to the person under stress. In addition, the user will not have to wade through the body of the plan under emergency conditions to figure out what to do next.

Other items to be included on the disaster recovery checklist are the telephone and address cascade list of the core team members and the telephone numbers, addresses, and names (if applicable) of the nearest supplier of emergency facilities, equipment, and recovery materials. Addresses are necessary because telephone service may be disrupted throughout the city. Streets and bridges may also be blocked, making it difficult to make easy contacts.

Existing emergency reaction plans provide for the safe evacuation of people from hazardous situations and the continuation of Bureau business. See BLM Manual Section 1170 and Supplementals. This disaster recovery plan and checklists assume that a disaster has occurred and that hazards to human safety have been minimized or eliminated. The plan and checklists are limited to a consideration of proper recovery methods that are used to salvage vital and one-of-a-kind records.

The local "Disaster Recovery Plan" and this "Emergency Checklist and Information Packet" are classed as directives. This packet is to be placed in front of the local recovery plan in loose-leaf format so it can be updated. Distribute home copies to all core team members and copies to all divisions within the organization.

SAMPLE

EMERGENCY CHECKLIST AND INFORMATION PACKET

IF YOU ARE THE FIRST PERSON ON THE SCENE!

[ ] 1. Contact the Fire Department.
Time: : []am []pm Date______________

Phone 236-4444
Building 44
Denver Federal Center

[ ] 2. Has the disaster core team leader been notified? (See telephone cascade sheet.) Turn this packet over to any core team member upon their arrival.

[ ] 3. Brief the assembled core team members as to the nature and extent of the disaster. Consult with the Fire Chief to determine when the building will be safe to enter.

[ ] 4. Make assignments to core team members:

- a. Bring appropriate supplies to the disaster site. (Flashlights, portable power plants, maps, buckets, etc.)
- b. Assemble work crews.
  - 1. Brief them on what work is to be done.
  - 2. Caution them on safety precautions.
  - 3. Instruct them on document handling.
  - 4. Form work teams. (Access, clean-up, packers, etc.)
- c. Contact the health unit for tetanus vaccinations. (When not available, contact county health officials.)

[ ] 5. Upon entering the building (when safe):

- a. Take extensive photographs.
- b. Lower temperature and humidity if possible.
- c. Clear major entrances and aisles.

[ ] 6. Assess character and extent of damage. Decide whether or not to salvage.

[ ] 7. Contact the Preservation Officer at the Service Center. FTS: 776-6641, Comm: 303-236-6641, home: 303-922-7086.

[ ] 8. Alert freezing and/or film processing facilities that you will be bringing materials in to be treated. Contact other sources, as appropriate, for any needed salvage equipment. Document all purchases and rentals.

SALVAGE

[ ] 9. Begin clean-up. Protect unaffected records.

[ ] 10. Drain, pack, and remove records to be recovered. Continue clean-up.

[ ] 11. Constantly monitor all wet documents for mildew.

[ ] 12. By now, the situation should be stabilized; continue with recovery.

Sample Core Team and Emergency Telephone List

Denver Federal Center
Buildings 50, 40, 41
Bureau of Land Management

Disaster Core Team	Name	Office Phone	Home Phone & Addresses
Preservation Officer	John Headley	236-6641/ FTS 776-6641	(303) 422-7086 1210 North St. Lakewood, Co
Leader, Records Systems	Roger Molinar	236-6508	(303) 537-6833 1870 East Way Lakewood, Co
Office Services	Thomas Gomez	236-6485	(303) 123-7313 14790 West St Aurora, Co
Safety	Pat Holloway	236-6706	(303) 198-2115 2588 South Ct. Greenway Vill. Unit 25 Edgewater, Co

EMERGENCY NUMBERS

Federal Protective Service	236-2911	Gate 1.
Federal Center Fire Department	236-4444	Bldg. 44
Ambulance-Federal Center Fire Department	236-4444	Bldg. 44
Denver Federal Center, Office Buildings Manager	236-7613	Bldg. 41
Public Health Unit	236-3333	Bldg. 40

Note: Each core team is required to prepare and distribute a list similar to this one.

Priority Records To Be Salvaged

If a disaster is extensive enough to affect an entire office complex, the following list provides the priority sequence for treating various record types. Any record or document that is "one of a kind," and that has no, or only partial, backup by other copies, microform, or computer shall receive number one priority no matter where it is, within or near, a disaster area. Most disasters that strike are contained to portions of a building and only the records therein need direct attention. However, even though higher priority records are not directly affected by the immediate disaster, care should be exercised so that repercussions from the initial catastrophe does not reach any other records holding. In any disaster, the following priorities will be applied to the salvage effort:

1. Any "one-of-a-kind" record with no, or only partial, backup
2. All record copy archival case files on paper
3. All paper cadastral survey records (includes mineral survey records)
4. Accounting files on paper (including bills, billings, contracts, procurement, etc.)
5. Personnel office official records
6. All title plats and HIs (serial register books, tract books, GLO plats, patents, other conveyances, hearings contests and appeals)
7. Law library (library disaster)
8. Control document index
9. Mining claims (paper)
    a. Mining claims case files on microfilm (original)
    b. Mining claims - computer files (see State ADP Security Officer)
10. Original engineering drawings and reports
11. Archaeological research records and artifacts
12. Historic photographs and slides
13. Organization and History files
14. Other sensitive and proprietary files
15. Long range studies, plans, and research documents
16. Other records as listed in BLM Manual Section 1272, Records Management System Disposal Schedule

Disaster Equipment and Supplies

The items listed below must be assembled as soon as possible after a disaster strikes. Fire departments sometimes provide some of these items on a temporary basis for stabilizing the environment, such as fans for clearing smoke, etc. Other items are probably already in stock in some of the offices. For instance, wrecking bars, portable generators, etc., can be obtained on short notice from a District Office. Finally, some items will have to be borrowed, rented, leased, or purchased as there is no other way to obtain such specialized services or equipment.

Equipment

Wet/Dry Vacuum Cleaners
Wrecking Bars
Heavy Duty Extension Cords
Portable Electric Sump Pump
Portable Generators
Electric Fans
Mops and Buckets
Work Tables
Electric Steam Irons
3/4" Plywood (cut to required sizes)
"C" Clamps
Hand Saws

Services, Supplies, and Equipment

Deep-Freeze Facilities
Refrigerator Trucks
Vacuum Drying Facilities
Dry Ice
Plastic Milk Crates
Unprinted Newspaper
Photographic Services (BLM) camera, film, etc

Using this checklist, the core team shall add the name and address of the local or nearest vendor(s) of each item shown. Following is a sample checklist.

Disaster Equipment and Supplies

SAMPLE LIST
DENVER SERVICE CENTER
EMERGENCY EQUIPMENT AND SUPPLIES
Building 50

Portable electrical generator sump pump	Any rental service, Denver Metro Area	
Portable electric fans	Office Services, DSC	
Heavy duty extension cords	Any rental service	
Water/wet vacuums	Any rental service	
Mops and buckets	Any Safeway or King Soopers	
Smocks	Uniform rentals	
Work gloves	Handy Dans	
Boots	Dave Cook Sporting Goods, Northeast Res. Area Office	
Refrigerator Trucks	Gelco/Feld Leasing	292-6762, 1910 38th Ave.
	Ryder Rental	543-8211, 550 Bryant St.
	Saunders Leasing	287-2871, 5345 Newport St.
Vacuum drying facilities		
Ball Aerospace Systems		441-4616, Denver
	Mr. Wayne Pears	
Martin Marietta Aerospace		977-4049, Denver
	Mr. Bob Parrish or	12275 S. Hwy 75
	Mr. Glenn Roat	977-3853
Document Reprocessors		1-800-4-DRYING
	Mr. Eric Lundquist	In CO., (415) 362-1290 55 Sutter St. #120, San Francisco, CA 94104
Deep-freeze facilities		
Beatrice Cold Storage Warehouse: Mr. Stan Sena		320-0333, 4475 E. 50th Ave.
Kings Frigid Food Bank		733-3533, 2039 S. Federal
Rite-Way Freezer Service		722-1034, 290 W. Evans Ave.
King Soopers		778-3100, Div. Headquarters
Safeway		759-7600, Div. Headquarters
Arco CO_2 & Dry Ice, Inc.		232-2861, 1152 Harlan

SAMPLE

Fast Drying

The fast drying technique discussed here uses an electric iron and is not a recommended curatorial practice. However, relative humidity in various locations throughout the country and at certain times of the year can be too high to successfully attempt an air drying salvage. The work space available for laying out documents for air drying will most likely be limited and must be restricted to vital/archival records that are not to be dried in direct sun light. The air conditioning system, if at all available, will have a limited capacity to remove humidity from the air. Therefore, the preservationist is faced with the problem of time needed to perform priority salvage and the ever-present threat of mildew, which, in turn, will cause a human health problem and add to the recovery expense.

The following technique is recommended mainly for (1) water-damaged documents that have a short retention period and do not need exacting preservation treatment or (2) documents that merit retention yet are in such a poor physical state that microfilming (see 41 CFR 101-11.5506) or reprographics on suitable materials will be necessary for continued preservation of the record.

An electric iron, if properly used, can solve the problem of layout space and drying time. To perform this technique, the technician must understand that an electric iron produces heat in the form of infrared radiation (IR). Infrared radiation is less harmful to paper than ultraviolet radiation (black light). However, damage will occur if too much heat is applied. The IR will artificially age the fibers of the paper. The key to this drying technique is not to allow the temperature of the paper to exceed 212°F., the boiling point of water. Caution: If the papers become too dry, they will be brittle.

Equipment

Cut 3/4-inch plywood into boards approximately 4 inches longer and wider than the documents being treated. Cover each board to be used with waxed paper or freezer wrap as a protection against splinters. Cut blotter papers to approximately the same size as the boards.

Technique

Place one blotter on the board and lay a damp or moist document on it. Over this, place a second blotter. With an electric clothes iron set on "cotton", move back and forth as evenly as possible until the heat penetrates into the document.

Fast Drying--continued

Remove the top blotter and turn the document over. Replace the top blotter and repeat the ironing process. As it is being dried, the document will tend to curl toward the surface that is the driest. Occasionally, flip the top blotter so any moisture buildup will be steamed away. The same is true of the bottom blotter. Exchange it occasionally with the top blotter as it will tend to accumulate excessive moisture.

When the surfaces of the document feel dry to the touch, it is then stacked on a second paper-wrapped board. Interleave sheets of paper towels between each document as they are dried. When the document stack is about 12" high, place a second wrapped board on top and weight it with paper-wrapped bricks. These stacks should be allowed to sit for at least 8 hours so the remaining moisture in the paper can equalize throughout each sheet. Multiple documents such as case files can then be reassembled and boxed for shipment to a new location or replaced in the original location as soon as it is dry and has been sterilized.

Caution: Test each document before being fast dried as some "inks" are susceptible to melting under excessive heat. This can be done by placing a scrap of clean paper over a letter on the sheet to be dried. Press the tip of the iron onto the covering piece of paper so only the letter being tested is heated. When the cover scrap begins to brown (scorch) remove the iron leaving the scrap in place. When it has cooled, lift the scrap. If the letter or an impression sticks to the scrap it is an indication that the "ink" is heat sensitive. These documents will have to be air dried.

Thymol Treatment for Mildew

Thymol is a white crystalline aromatic compound ($C_{10}H_{14}O$) derived from thyme oil and used as a preservative.

Thymol paper allows onsite treatment for mildew so that records need not be removed from the storage area. However, prepared thymol paper does not have a long shelf life, so it must be freshly made. The following paragraphs provide instructions for making thymol paper.

Add thymol crystals to about a half pint of denatured ethyl alcohol (ethanol) until they no longer dissolve. This indicates that you have a saturated solution. Do not mix more solution than you will need.

Pour the solution into a flat photographic tray that is large enough to fully immerse (one at a time) previously cut sheets of inexpensive paper such as unprinted news print. After soaking for about 30 seconds, hang the impregnated sheets to dry, either in the open air or in a chemical hood. Common nylon screen, as used in windows and doors, suspended between two supports makes a good drying rack.

Make enough papers to place one sheet in all of the drawers, shelves, and trays that have been affected by excess moisture. If the papers have been properly cut to size, it will be easy to close the drawers, lids, etc.

Allow the papers to stay in place at least 48 hours. If necessary, the documents can be accessed during this time, but avoid it if possible.

Be sure the thymol papers are dry before they are put in place.

Warning: Mix the solution and treat the papers in the open air where there is no danger of fire. Wear eye protection.

OBSERVE EXTREME CAUTION !!! This treatment is for airborne spore only.

If there are no fire hazards or ventilation problems, any excess solution can be painted or sprayed on the walls, floors, and backs of cabinets and in the air where mildew can exist. SEE YOUR SAFETY OFFICER FIRST! Lock the room for at least 24 hours if using a fumigation process. Air the room out for at least 2 hours before turning on any electrical or heating devices. Records to be treated should not be tightly packed.

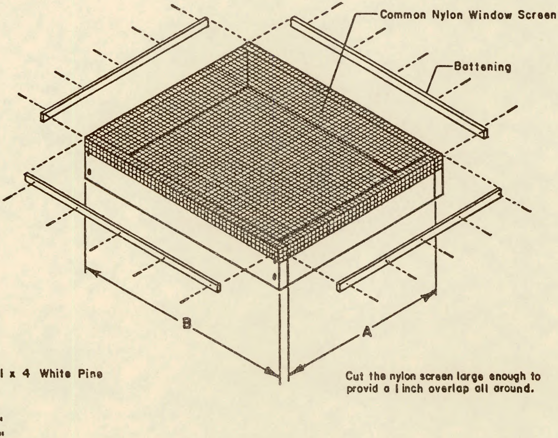
Thymol Treatment for Mildew--continued

Note: 1/Mildew spore, if left untreated, can spread and attack other records whenever the relative humidity becomes higher than 40 percent. Note also that persons allergic to penicillin can be affected by mildew if it is left untreated.

2/If a fire hazard exists, small amounts (1/2 pint or less) of thymol solution can be prepared using 1, 1, 1--Trichloroethane as a solvent. As long as the thymol is in this solution, avoid all skin contact or breathing any mist. See the Materials Safety Data Sheets (MSDSs) for these chemicals before using them.

The mildew dusting box shown below can be constructed in a short time and need not be added to the disaster equipment supply until it is needed. It is designed to allow the removal of mildew growth from documents and books while also reducing the amount of spore that might otherwise be fanned into the air, where it could infect humans as well as other film and paper documents. A size chart (see below) has been provided so different size boxes can be built to accommodate different document sizes.

Mildew Dusting Box



Nominal 1 x 4 White Pine

Cut the nylon screen large enough to provid a 1 inch overlap all around.

A	B
14"	18"
14"	20"
22"	28"

Mildew Dusting Box--continued

Simple butt joint construction with waterproof glue and adequate nails or screws is sufficient to build the box frame. Before nailing the batten strips in place, run a line of glue along the joining side. This will provide extra support for staples that hold the screen in place. The box will find use in both disaster and post-disaster treatment of records.

Document Dusting

Caution: When dusting for mildew, the user must wear a dust mask.

Place a sheet of newspaper under the dusting box. Using a 1" or 2" paint brush, hold the document or book close to, or touching the edge of, the screen and brush the mildew growth into the box. Brushing gently will reduce the amount of spore being fanned into the air, while the screen will act as a barrier to sudden drafts that could scatter the spore.

Change the newspaper whenever necessary. Do not leave overnight. Carefully roll the paper to avoid stirring the spore into the air. Once the documents are cleaned, they are ready for treatment with thymol. The box should be cleaned and sprayed with thymol before it is stored.

PACKING WET MATERIALS

The following information is provided courtesy of Document Reprocessors of San Francisco, Eric G. Lundquist, Owner/Founder.

Packing: See Figures 1,2,3 and 3a

Books should be boxed either flat or spine down to minimize damage to binding and costly repairs. Pack books of the same size next to one another to minimize warpage. Do not pack boxes too tightly. Remember, swelling will continue even after the boxes are packed. In addition, books and papers that have been water-soaked are heavier than normal.

Illustrations are provided as a guide for packing boxes and documents. Do not stack boxes over four high as they tend to collapse once the new cardboard box absorbs water from the wet contents. Shrink wrap the stacked boxes onto pallets to minimize transit damage and reduce handling costs.

Wrapping: See Figure 4

It is far more important to get the damaged materials well packed and into a freezer, wrapping only if time permits. However, unless vacuum freeze drying is used, there is a chance that book covers will stick together. The open method of wrapping shown in the illustration is simple and provides adequate protection. Freezer wrap, waxed paper, or if available, silicone release paper may be used.

Loose Documents: See Figure 5

Document files such as engineering drawings or plat maps should be packed flat in boxes of the correct size. If boxes are not available, cut sheets of 1/8" plywood slightly larger than the dimensions of the documents that will act as supports for the paper. These documents can be packaged in bundles approximately 2 inches thick. The documents must be protected from the bare wood by placing a layer of waxed paper between the documents and the wood. The bundles can be held together snugly with strapping tape.

Case Files: See Figure 6

Plain file folders are best packed vertically, with the spine of the folders down. On the other hand, file folders containing file holders with metal fasteners should be packed flat. If the packing boxes are too large, wad up pieces of unprinted newspaper to snugly fill the empty space so the records will not be damaged while being moved. Do not pack tightly. Whenever possible, leave the file folders in the drawers. Simply remove the drawers from the cabinet and send them intact to the freezer.

Figures 1 - 6

PACKING WET MATERIALS

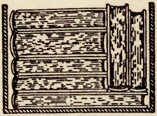


Fig. 1 Proper technique for packing "wet" books.

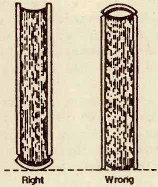


Fig. 2 Books packed on their spines will receive less distortion.

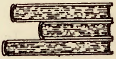


Fig. 3 Improper method of packing "wet" books.

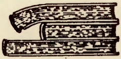


Fig. 3a Wet books will slump, causing permanent damage.

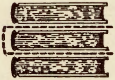


Fig. 4 "Loose" or "Open" method of wrapping books.

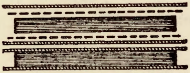


Fig. 5 "Sandwich technique for packing loose documents on support boards.

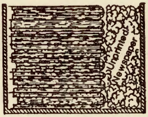


Fig. 6 Case files are damaged least when packed flat.

General Guidance for Damage Assessment

The scope of a damage assessment is proportional to the scope and intensity of the disaster. The knowledge needed to conduct a damage assessment is limited to the very few who are trained specifically for such work (insurance investigators), and to those who have survived catastrophies and learned from the experience. However, an inexperienced person can use the following information to assemble a clear picture of the extent and severity of any damage that has occurred.

Damage assessments provide the information needed to assemble work crews, choose proper tools, and obtain needed supplies. Assessments are also invaluable later on when compiling the final reports and accounting for the decisions made during the high stress periods of the initial disaster. The one basic rule to keep in mind at all times is: Always take photographs.

Categories for determining the level(s) of damage are:

Destroyed - The item* is a total loss or damaged to the extent it is no longer usable; repairs or restorations are not economically feasible.

Major Damage - The item* is damaged to the extent that it is no longer usable or is usable under limited conditions or reduced service, and in any case may be returned to full service only with extensive repairs.

Minor Damage - The item* is damaged but may either be used for its intended purpose or be restored to service with minimal repairs.

Jeopardy - The item*, even though it shows no outward signs of damage at the time of the assessment, may be at risk due to a recurrence or extension of the initial disaster or may be damaged by the access, packout, or cleanup activities.

*Item as used in this context can apply to bridges, roads, buildings, computer terminals and media, office equipment, paper, etc.

The extent of the disaster must be assessed as to area, building, room, and condition of records. Always take ample photographs.

Area

Disasters such as earthquakes, hail storms, tornados, floods, and high winds require a broader assessment than disasters that are confined to a single room. Since areawide disasters will involve the local employees and their homes, it is more likely the assessment and recovery efforts will be performed by personnel from the designated alternate office. In any case, the scope of the areawide assessment will require the use of aircraft to determine and map safe routes of ingress for the recovery teams and their supplies. Therefore, area maps prepared beforehand from USGS quadrangles must accompany all copies of the local recovery plan. These maps can be photographically reduced, when desirable, into the 8 1/2" x 11" format. Maps from other sources may be helpful, but if they are covered by copyright, individual maps will have to be purchased to be included with each copy of the recovery plan. Area disasters having the magnitude of floods, earthquakes, etc., will also require building(s), room(s), and record materials assessments.

Building

Entry into damaged structures should always be under the direction of a fire chief or person with similar training. In major disasters, such persons may not be available. Under these circumstances, the building manager should be contacted to turn the electricity and other utilities off. Civil engineers on Bureau staffs should be able to determine the safety of the structure for removal of the records. Above all, the safety of the workers is the first priority. Never enter a damaged building alone. Assessment crews will consist of (1) fire chief, or building manager, or engineer; (2) assessor; and (3) photographer.

Room

Each room where vital records are used or stored must be declared safe before workers enter to photograph, clear aisles, and packout the records. Current copies of the building's floor plans must accompany every copy of the disaster recovery plan and must show what records are in each room and their priority of removal. (See Appendix 1, page 5, "Priority Records To Be Salvaged.") Form 1273-3, "Disaster Recovery Record Assessment" will provide the additional information that the recovery teams will need regarding location, type of records, amount, and use/storage.

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Record Materials

The most critical assessment involves the damage to records themselves. This crucial assessment determines whether records will be destroyed or salvaged. Remember, records to be destroyed must:

a. Have approval of the Archivist of the United States.
b. Be inventoried so they can be replaced if they are backed up.
c. Be assured of total destruction, especially if there is the slightest possibility that they may contain any Proprietary/Sensitive Information (P/SI) that is still readable (by eye or by machine).

The decision to salvage must follow the steps outlined in this appendix and the textual portion of this handbook.

AREA DAMAGE ASSESSMENT REPORT

ROADS AND BRIDGES Aerial Survey ____________ Ground Survey ____________

The area of damage is best determined from the air, while the seriousness of the damage can only be assessed from onsite inspection. Use separate copies of this report for each assessment. From the aerial survey, determine the initial outside assistance needed to begin recovery of the records for manpower, material, equipment, technical assistance, and travel.

ACCESS ROUTES

Access To/From Item/Service Via Roads And Bridges	Define the boundaries of the damaged areas. North, South, East, West using data from the area maps.

Office Sites (list below) ______
Warehouse ______
Recovery ______
Medical Assistance ______
Hospital ______
Fire Protection ______
Business ______
Public Safety/Security ______
Residential ______
Other ______

Record the decisions made from the above assessments in providing logistics from outside and local sources. Use additional sheets of plain ruled paper if necessary.

Time ______ AM PM Date ____________ Certified by ____________

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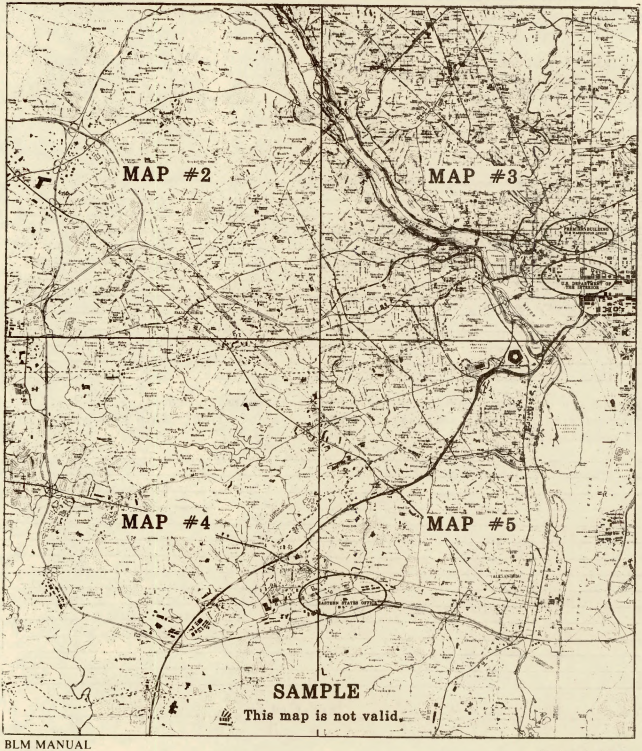
AREA ACCESS MAP #1

Map # 1 of 6

The situation depicted here for the Headquarters and Eastern States offices is more complex than any that will be encountered when designing recovery plans for other Bureau offices. Although the continuity of the main roads is shown, safe routes of ingress should also be depicted on the more detailed sectionalized maps. The area of destruction will best be shown on this map.

MAP #1



Provide pertinent information on the reverse side of the maps.

Eastern State Office
350 South Pickett Street
Alexandria, VA 22304
(703) 274-0190 and FTS

Department of the Interior
Bureau of Land Management
1725 I Street, N.W.
Washington, D.C. 20006
(202) 653-8853 and FTS

Department of the Interior
18th and C Street, N.W.
Washington, D.C. 20240
(202) 343-9435 and FTS

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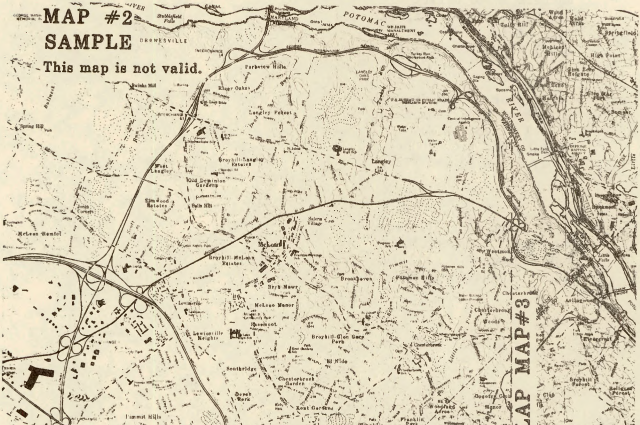
ACCESS MAP #2

Map # 2 of 6

Allow for overlap from map to map. Once a disaster has occurred, make at least five copies of these before proceeding with the damage assessment.



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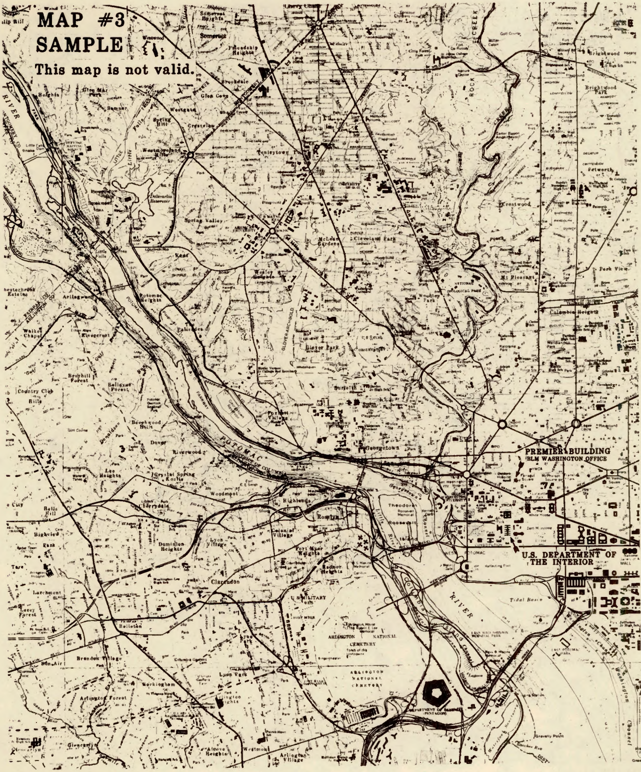
ACCESS MAP #3

Map # 3 of 6

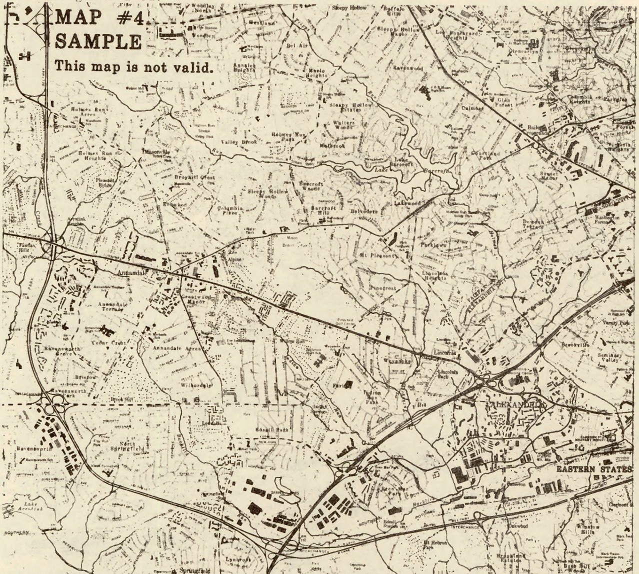
Use colored pencils to indicate notable map features. For example, green to show safe routes of ingress, red lines and X's to indicate damage, etc.



H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS
ACCESS MAP #4

Map # 4 of 6

Although they may no longer exist, or may be completely changed after a catastrophic disaster, outline water areas in blue. Indicate changes in yellow. Mark destroyed landmarks that normally might be used by drivers entering the area.



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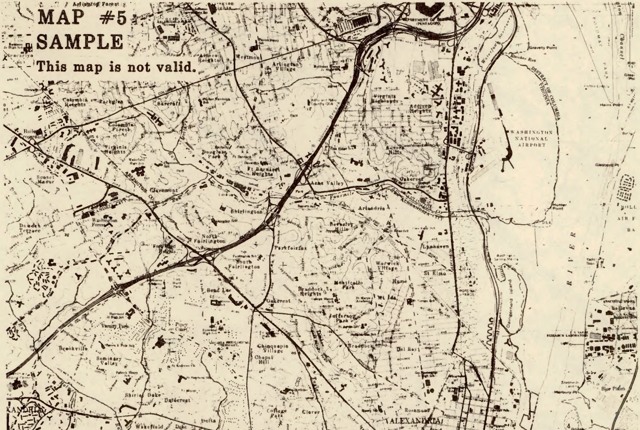
ACCESS MAP #5

Map # 5 of 6

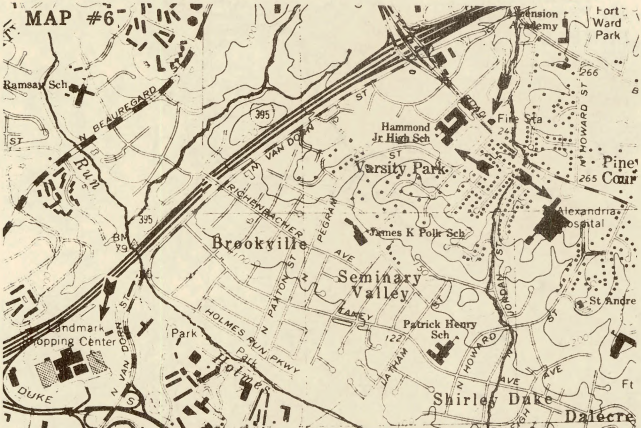
Hand color extra copies and distribute them to core team members, recovery team leaders, or drivers. Retain the originals for inclusion with the final report.



ACCESS MAP #6

Map # 6 of 6

A larger scale map may be necessary to show access routes and/or damage to such items as hospitals, fire stations, supply businesses, schools (with auditoriums), and any federal facilities.



EMPLOYEE PROTECTION REPORT

HEALTH AND SANITATION

When assembling work crews, evaluate the need to provide the following before entering any disaster location:

____ Protective clothing

____ Respirators

____ Eye wear

____ Immunization

____ Potable water

____ Sewage disposal

____ Vector/rodent control

____ Crisis counseling

____ Hazardous material cleanup

Record the decisions made concerning all items on this list, especially if outside sources are used.

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BUILDING DAMAGE ASSESSMENT REPORT

BUILDINGS AND APPURTENANCES

Before entering any building after a reported disaster, make a visual inspection for any outward signs of structural damage. Upon entering the building, assess the access into halls and rooms, primarily for structural debris and then for decorative debris, as either can pose hazards to human safety; then mark copies of the floor plans to show safe routes to clear for packout.

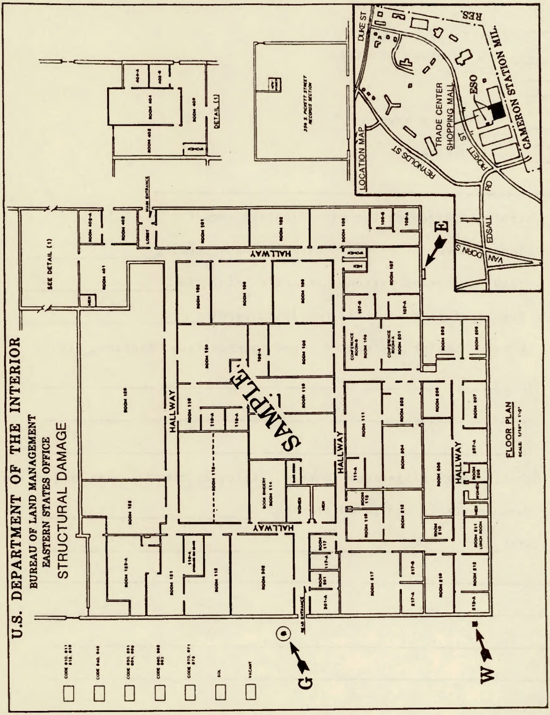
Building Damage	STRUCTURAL CONDITION						Estimated duration of disruption of office operation caused by building damage
	No Damage	Jeopardy	Minor Damage	Major Damage	Destroyed	Debris	
Office Site							
Satellite Office #1							
Satellite Office #2							
Satellite Office #3 (etc.)							
Warehouse							
Recovery Site							
Other							

Use this space to describe overall building damage and record the decisions made effecting recovery of the records. Use additional sheets of plain ruled paper if necessary.

Time ______ AM PM   Date ______   Certified by ______

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS
STRUCTURAL DAMAGE

Structural damage may hinder or prevent access to shutoff locations for utilities, in which case they become a greater threat to human life. Mark the locations for these items on this map. Whenever possible, leave the control of these utilities to professionals. Use symbols to mark locations, e.g., W = water, E = electricity, and G = gas. Mark floor plans at the time the preliminary assessment is made. Do not trust to memory later.



Human Needs

1. Estimated number of employees who will require additional funds to cover necessary expenses or serious needs.

______ Food
______ Shelter (tents)
______ Work areas (tents)
______ Tables
______ Chairs
______ Cots
______ Sleeping bags
______ Heaters
______ Medicines

____

2. Is there a requirement for mass feeding? yes ( ) no ( ).

A. Total number of persons requiring mass feeding________________.

B. Total number of persons presently being fed__________________.

C. Number of persons still requiring feeding_____________________.

D. Outside assistance needed (food, preparation, storage, etc.):

____

____

____

3. If other Federal assistance is unavailable, is there a need to provide for human needs in the immediate area? ___________________________

Explain:____

____

____

____

____

UTILITY DAMAGE ASSESSMENT REPORT

UTILITIES

Assessing the availability of utilities under disaster conditions is not enough. All utilities must be considered for turning off upon arrival at the work site. Conditions will dictate which utilities can be turned on as soon as they no longer pose a threat to human health and safety. All disrupted service must be turned off. This sheet is to be used as a check list that will reduce the potential of accidental fires or explosions. Portable facilities must be made available at all disaster sites. Security must be provided for generators, water supplies, etc.

Utilities	Disrupted	Turned off	Usable	Date	Health Hazard	Safety Hazard	Verify date, time, and initial as each item is restored
Electricity							
Gas							
Water Storage							
Water Distribution							
Water Supply							
Sewage							
Sewage Disposal							
Waste Disposal							
Telephone							
Other Communications							
Transportation							
Other							

Record any unusual circumstances associated with why certain decisions were made to provide temporary items.

Time ______ AM/PM Date ____________ Certified by ____________________

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ROOM DAMAGE ASSESSMENT REPORT

ROOM (Number or Location) ____________________

As each room is entered to perform recovery of the records, photograph the debris, debris removal, condition of the records, damaged records, undamaged records, etc. Prepare a separate copy of this report for each room. Reference BLM form number 1273-3, Disaster Recovery Record Assessment that should be filed with the local disaster recovery plan. Refer to Appendix 1, page 5 of this document to ascertain the priority of the records to be packed out.

1. Use the descriptors of jeopardy, minor damage, major damage, and destroyed to assess the condition of the records occupying this room. (Estimate percent of recoverable and nonrecoverable records.)

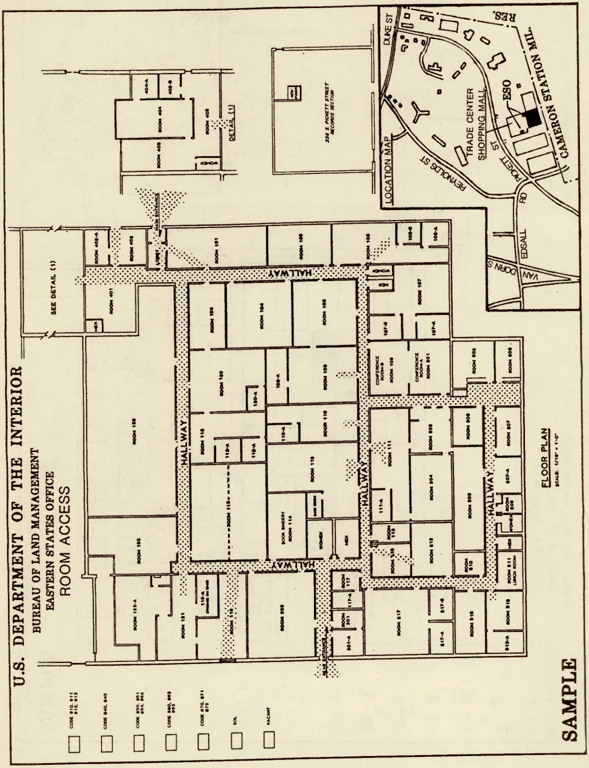
2. Records to be recovered, when water damaged, are to be described as wet, moist, and damp. See Appendix 4 of this document.

I certify the records (paper, film, magnetic media, etc.) occupying this room are (recoverable/nonrecoverable) and that those containing proprietary/sensitive information will be safeguarded until such time they are (properly recovered/disposed of by law).

Time______ AM/PM Date ____________ Certified by ____________________

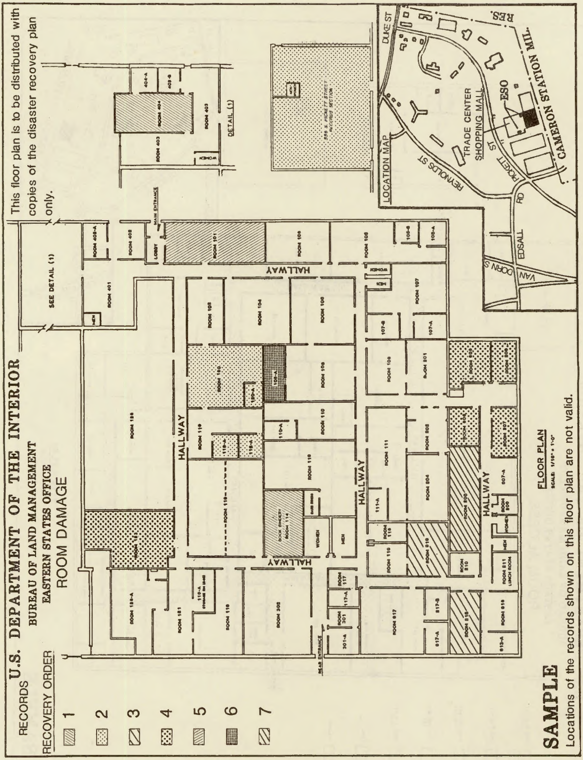
H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS
ROOM ACCESS

Removal of records materials from a damaged area should be by the shortest and safest routes.



H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS
ROOM DAMAGE

See page 5 of this appendix to determine the required priority for removal of records from a disaster site.



EMPLOYEE WELFARE

During and after a disaster, observe all employees as to their attitudes, morale, and health. A written statement generally describing injuries (if any), personal losses (life, homes, etc.), and absence from work should be included with the final report.

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

Predisaster Stockpile

Working Papers

	Silicone Paper, 26" x 20 yds.	2 rolls
**	Waxed Paper (50 yd rolls)	6 boxes
	Freezer Wrap	4 rolls
	Paper Towels	24 rolls
	Blotters, 32" x 40" (white only)	2 containers of 10
	Unprinted Newspaper (stub roll)	1 each

Tools

Micro Spatulas	8 each
Bone Folders	8 each
X-Acto Knife, #1	8 each
X-Acto Blades, #611	1 pk. of 100
Brayer (semi-soft roller)	4 each
Squeegee	8 each
Scissors	8 each
Paint Brushes, 1"	4 each
Paint Brushes, 2"	8 each
Putty Knife, 2"	4 each
Magnifier Worklight	2 each
Stainless Steel Straight Edge, 18"	2 each

**Check these items once every year.

If any items go bad, replace them.

Predisaster Stockpile--continued

Personal Protection Supplies

1/ *	Organic Vapor Respirator 3M #8712 or equivalent	12 each
	Formaldehyde Respirator 3M #8754 or equivalent	2 each
	Dust/Mist pre-filter 10/box 3M #8732 or equiv.	2 boxes
	Retainer Ring 3M #8744	15 each
	Protective Spectacles	12 each
	Neoprene Coated Work Gloves	24 pairs each
	Asbestos Work Gloves (or insulated)	6 pairs each
	Cotton Work Gloves	12 pairs each
**	Rubber Gloves	12 pairs each
	Hard Hats	8 each
**	Vinyl Protective Aprons	12 each
	Lab Coats	4 each
2/	Overshoes (Sm, Med, Lg)	2 pr. each

*Check these items once every 6 months.
**Check these items once every year.

If any items go bad, replace them.

1/ The use of respirators is regulated by 29 CFR 1910.134 and requires written standard operating procedures (SOP), training, and an inspection program. Special training is to be provided key personnel who will, in turn, train other employees.

2/ At least two pairs of each size (small, medium, and large) of overshoes must be stocked in the cache. In a disaster (especially sewer back-up), temporary protective footwear can be made from 40-inch-square pieces of sheet plastic reinforced with 3M brand or equivalent "Saftey Walk" antislip, stick-on material. The reinforcement should be cut to the size and shape of the shoe sole of the wearer. These "temporary boots" are than held on by using large rubber bands. This temporary foot protection should be replaced as soon as possible.

Predisaster Stockpile--continued

Chemicals

*	Thymol	1 pound
*	Methyl Alcohol	1 gallon
*	Lysol or equivalent	1 quart
	Formaldehyde	1 pint

Other Supplies and Equipment

**	Plastic Sheeting	4 rolls
	Plastic Pans, 18" x 18"	4 each
	Plastic Buckets, 2 gallon	4 each
	Nylon Window Screen, 36" x 76"	2 rolls
	Lockable Chemical Cabinet	1 each
	Lockable Equipment Cabinets	2 each
	Wide-Mouth Bottles, 8 ounce	6 each
	Adjustable Spray Bottles, 12 ounces	6 each
	Heavy Clay Bricks	36 each
**	Rechargeable Flashlights	4 each
	Covered Plastic Garbage Cans	2 each
**	Plastic Garbage Bags	2 rolls
	Cotton Balls	2 packages
	Q-Tips	2 packages
	Cheese Cloth	6 packages
	Flat Cardboard Archive Boxes	4 dozen
	Strapping Tape	8 rolls
	Sponges	6 each
**	Dry Chemical Sponges	6 each

NOTE: The key to combating any disaster is fast action, and the extent of a disaster is unpredictable. The items and amounts in this list are the minimum needed to allow the disaster teams to start working as soon as it is safe and to allow time for additional supplies to be found and purchased.

*Check these items once every 6 months.
**Check these items once every year.

If any items go bad, replace them.

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

Destruction of Federal Records

WARNING: The unauthorized disposal of Federal records is illegal!!! (See 18 U.S. Code Chapter 101, Section 2071.)

If a records holding is damaged in a disaster and the decision is made not to salvage, the damaged records cannot be disposed of unless such action is authorized by the Archivist of National Archives. Refer to the following:

Public Law 90-620, October 22, 1968
44 United States Code, Chapters 31 and 33
Federal Property Management Regulations 101-11.00
Public Law 98-497, October 19, 1984 (Sec. 36 Code of Federal Regulations 1200)

The damaged records must be inventoried and the list submitted to the National Archives and Record Administration (NARA), Washington, D.C., 20408 on Standard Form 115. NARA was formerly known as National Archives Records Service (NARS).

Use the Records Management Handbook prepared by NARA, "Disposition of Federal Records" No. 7610-01-055-8704 to compile the inventory and determine the value of the records. Water-damaged paper records to be disposed of will have to be stacked (no higher than 2 feet) on wooden pallets to air dry. In the time required to obtain authority for disposal, mildew will possibly appear and must be combatted. (Thymol may be sprayed in small amounts directly on the mildew growth.) The temporary storage area must be secure, for example, in a District Office garage. Be sure there is no chance of water draining from these records and causing damage to other paper products, tools, or equipment.

In the case of silver halide films, drain as much water from them as possible and store them in dry plastic garbage cans. (Do not overload.) Sizable holdings of damaged silver halide films should be transferred to the General Services Administration (GSA) to be sold for the recovery of silver.

Box the records that are to be picked up for destruction, following the regulations listed in 36 CFR 1228.74, Methods of Disposal.

Disasters involving fire damage to certain records with plastic coatings, covers, or bases and constituting a menace to human health or life may be disposed of under 36 CFR 1228.90, Emergency Authorization to Destroy Records.

H-1273-1 - DISASTER RECOVERY PLAN FOR PAPER AND FILM RECORDS

The Mechanics of Paper

Water is not totally detrimental to paper. First, without the use of water, inexpensive paper as we know it could not be made. Second, water in the form of humidity, if kept constant somewhere within the 35 to 55 percent range and under a stable temperature of about 65°F, will help most types of paper stand up to constant use. Under normal conditions, paper should retain a minimum of 5 percent water to be mechanically safe. Abrupt changes in either temperature or humidity are the most serious reason, other than acid content, for paper to deteriorate in a short time. These environmental changes force the fibers in paper to shrink or swell, causing them to lose their bond to one another.

In some cases, where documents are to be mended, the moisture content of the paper must be slowly increased over a period of 3 to 5 days so that, when the repair is made, the document will not be left with an uneven pucker after the adhesive (water-reversible) has dried. On the other hand, the employee having to work with paper that has become excessively wet will note that there is a natural tendency for the material to pucker. This condition, inherent mostly to machine-made papers, is called "cockling." It is caused from stresses applied to the paper as it is lifted from the vats, dried, and wound onto large rolls in a continuous operation. Books with cockled pages will not close properly and records such as case files will require additional shelf space to compensate for the unevenness of the paper. To prevent cockling, papers must be clamped in a book press or flattened under a weighted board in the final drying stage.

The degree of wetness must be recognized and understood first in order to properly treat paper both to prevent mold and to avoid cockling during the drying process. Degrees of wetness are as follows:

> Wet: Papers sitting directly in a flow or pool of water, of course, are wet and must be handled on screen or film supports; otherwise, the weight of water in the fibers will cause the papers to tear or fall apart. Bundles of wet, loose papers will have to be freeze dried. If only a small quantity of records are affected, and time and help are available, wet papers can be successfully dried if they are carefully separated onto film supports, blotted and air dried until they are moist or damp (see below).
>
> When the volume of wet records exceeds the available help, the records are to be blast frozen as soon as possible. The decision to individually air dry, mass vacuum freeze dry, or to keep frozen until the time of disposal can then be made under less stressful conditions.

The Mechanics of Paper--continued

Moist: Papers that are moist have absorbed enough water so that they become limp but do not tear from their own weight. In many disasters, only portions of the paper have become moist from splashing. Partially moist and moist papers can be successfully separated and blotted with paper towels or blotting paper and then air dried, as long as there is not a large mass of records to be dried. If large volumes of these records need treatment, consider them to be "wet" and treat accordingly.

Cockling will become very prominent on partially moist papers. These must be pressed under weights as a finishing treatment.

Damp: Paper is considered damp if its water content is equivalent to its being enclosed in a room where the relative humidity is anywhere from 60 percent to 90 percent plus. Papers near a disaster area are subject to high humidity and are susceptible to mildew growth, and upon drying will cockle to some degree. They must therefore receive some treatment such as air drying and some finish drying while under weighted pressure.

Paper, like wood, has a natural grain, or direction, in which the fibers are laid. Most tears from routine use will be found to be along rather than across the grain. However, improper handling of wet paper can easily rip it in either direction. Grain is the major reason why paper will expand and contract more in one direction than in the other.

To avoid, as much as possible, unequal stress to any paper being repaired, the mending paper or tissue patch should be laid on with its grain corresponding to that of the document being repaired. The curator must choose adhesives and mending fabrics (paper or tissue) that will give both strength to the document and present an acceptable appearance.

Postdisaster Equipment and Supplies

Equipment and Tools

Dusting Frame, 14" x 20" (see Appendix 1, page 12)	1 each
Dusting Frame, 22" x 28" (see Appendix 1, page 12)	1 each
Tweezers (blunt)	4 each
Tweezers (pointed)	4 each
Heavy Clay Bricks	16 each

Paper and Book Cleaners

Opaline Pads	8 each
Artgum Erasers	1 box
Pink Pearl Erasers	1 box
Book and Print Cleaner, 15 oz. package	1 package
Cotton Balls	2 packages
Q-Tips	2 packages
Cheese Cloth	4 packages

Working Papers

Silicone Paper, 26" x 20 yards	2 rolls
Waxed Paper	6 rolls
Blotters, 32" x 40" (10 per container)	1 container

Repair Papers and Film

Sekishu, 21" x 25"	5 packages
Mulberry, 24" x 33 1/2"	5 packages
Silky, 18" x 24"	10 packages
Clear Polyester, 40" x 10' (5 mil)	1 roll

Adhesives

Methyl Cellulose
Wheat Starch
Polyvinyl Acetate (PVA)

Chemicals (eye, breathing, and skin protection required) - (MSDS)

Thymol
Ethyl Alcohol
Acetone
1,1,1--Trichloroethane, Inhibited
Petroleum Jelly
Deacidification Spray
Color pH Test Indicator Sticks

NOTE: Postdisaster equipment and supplies are generally not as critical as predisaster materials, aside from the need to make crucial repairs to records that must be put in service as soon as possible. Note also that some of the items in this list are repeated from the predisaster list. Many of these items, depending on the disaster, may be expended in the initial treatment of the records and will have to be replenished when making the records fit for use.

Postdisaster Equipment and Supplies

ARCHIVAL MATERIALS SUPPLIERS

Talas, Inc.
213 West 35th Street
New York, New York 10001
(212) 736-7744

University Products, Inc.
P.O. Box 101
South Canal Street
Holyoke, MA 01041
1-800-628-1912

Light Impressions
430 Monroe Avenue
P.O. Box 940
Rochester, New York 14603
(716) 271-8960

Direct Safety Company
2815 South 46th Street
Phoenix, AZ 85040
1-800-528-7405

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Document Cleaning (Paper)

Step 1. Remove surface soil using K & E Draft-Clean, Opalene, or ABC Dry Clean Pad.

A. Knead powder from pad or bag onto document. Rub with the fingers using a circular motion over the entire surface. Remove powder with brush.

B. If this does not effectively remove soil, knead powder onto the document and rub with the pad or bag itself.

Step 2. When cleaning powders are not effective, use an art gum eraser.

Step 3. Dirty spots may be removed with a "Pink Pearl" eraser.

Step 4. As a last resort, a putty type of wallpaper cleaner may be used. Do not use any liquid cleaners.

NOTE: Care should always be taken to remove all eraser residue from the surface of paper and the spines of books before they are replaced in storage.

Paper Types

Employees should be aware of different types of papers and the problems that can be encountered with them in both the rescue and refurbishment operations. Generally, there are two types of paper, one being made from wood pulp and the other from cotton fiber (rag), that can be found in any records holding. The main differences are the thicknesses of each variety, the chemistry used in manufacture, and the finish that has been applied to the surface of the paper. Another consideration is treatments that have been applied to the papers once they have been put in use, such as cloth backing and glues. Normally, papers found in records holdings will consist of one of those listed below:

NEWS PRINT

Wood Pulp, High Acid Content, News Release Scrap Books

Collected newspapers/newspaper articles are a historical accounting of operations of a Bureau office. Recovery from water damage, unless certain articles are of extreme historical importance, should go no farther than drying and preparation for microfilming. The curator when working with these items will encounter different paper grades, water soluble dyes, and a variety of adhesives, including adhesive tapes, each needing special treatment. In most cases, salvage of this record type will be deemed unnecessary, except to list headline, newspaper name, and a date published in case there is a future need to reconstruct.

BOND PAPERS

Rag, Rag and/or Wood Pulp, Acid Content Variable, Vital and High-Value Records

The decision to salvage or not must be made and carried out as soon as possible. Bond papers are finished with various water-soluble sizing materials that will glue water-damaged papers together if they are left untreated too long, or if they are improperly dried.

BOOK PAPERS

Rag, Rag and Wood Pulp, Archival to Acid Content, Vital Records and Library Materials

In order to receive liquid and/or printers inks, these papers are heavily coated with sizing. Salvage must begin before any natural drying takes place.

Paper Types--continued

BRISTOL BOARD

Rag, Rag and Wood Pulp, Archival to Acid Content, Vital Records, Cloth-Back

These records are not only sized in the manufacturing process but have received other treatments, such as the application of a sized cloth-backing that has been applied by a hot glue or other adhesive (the curator must determine which). Also, some of these documents have been edged with adhesive tapes. These are among the vital records to receive priority treatment.

CONSERVATION PAPERS

Recovery from any of the three types of disasters (Acts of God, Acts of Man, or Creeping Disaster) will require that sound repairs be made to documents and books. Never use adhesive tapes or films. Only acid-free mending papers and acid-free, water-reversible adhesives are allowed for conservation work.

Muslin cloth may sometimes be used. Only persons trained in restoration techniques are to attempt repair of vital documents. The curator must, therefore, become familiar with some of the conservation papers and their applications to document repair. Each location should plan to train an employee in conservation methods.

Antique Endleaf Paper - Endleaf paper with a laid finish for new books or restoration. 80-pound text weight paper. Finishes include white, unbleached, or colored in a Florentine or Marbled pattern.

Bodleian White Paper - Handmade in England, 100 percent rag (cotton and manila). Watermarked. The oldest repairing paper for books and documents with an antique shade and laid finish.

Mulberry Paper - Handmade in Japan from kozo and sulfite pulp. Lightweight and yet strong and soft.

Sekishu - Handmade in Japan of a mixture of kozo and sulfite pulp. This is the largest handmade sheet currently available. For wood engraving, block printing; not recommended for offset. White, Natural. Deckles 4 sides.

Sekishu Natural Hinging Paper - Used for making archival print hinges with the proper adhesives; also used by paper conservators to mend damaged or torn documents.

Silk Tissue - Machinemade in Japan with a large portion of gampi. For interleaving and overlays on prints or book illustrations. White.

Sekishu Kozogami Turu - Handmade in Japan, 100 percent kozo. Practical for all types of repair work. Off-white. Deckles 4 sides.

Disaster Recovery

THE HUMAN ELEMENT

The type, extent, and severity of a disaster directly affects the amount of damage to buildings, equipment, and supplies. However, the type of emotional trauma experienced by people in their home or work place is much the same, regardless of the nature of the disaster.

Persons directing a disaster recovery operation and those caught up in such an event should be aware of what is happening to themselves. Disaster planning and preparedness reduces, but does not eliminate, the disaster trauma. There are four distinct phases in human behavior that can be recognized in the aftermath of a disaster.

Phase I - The Heroic Phase

This occurs at the outset of the disaster, when people take immediate action to save life and property, and lasts about 72 hours. It does not fade away but abruptly stops. Volunteer help is easily found during the beginning of this first phase.

Take the names and addresses of all volunteer helpers, perhaps after clean-up; it is appropriate to send letters of "thanks." More important is to recognize this help during the heroic phase by giving work breaks (about every 2 hours) and try to provide soft drinks and coffee. Your resources at this time, depending upon the disaster, will be family, neighbors, friends, and emergency personnel.

Phase II - The Honeymoon Phase

The second phase occurs from 1 to 2 weeks after impact and may extend from 3 to 6 months. The sense of having "shared" with others a dangerous experience and having lived through it brings about a spirit of cooperation unobtainable under any other circumstances. Social and/or community support systems will have initiated efforts for the clean-up. If the disaster is extensive, external support systems (State and Federal) will come into the community. Members of the community anticipate that external agencies will be able to provide enough financial assistance to put everything back to normal. Persons often experience a sense of optimism about the rebuilding process but may tend to deny their feelings of being overwhelmed by the task. As a community, people have the need to believe that the trauma will be repaired quickly and easily. However, they have not confronted the realities of long-term reconstruction and resolution.

Phase III - The Disillusionment Phase

Disillusionment occurs 2 to 3 months after the initial impact and may extend from 1 to 2 years. Individuals may experience an increased sense of disappointment, resentment, and anger. They will begin to feel more isolated from other victims when State and Federal support agencies become less visible as they decrease their personnel and operations.

Notification on grant/loan awards, which may be less than anticipated, adds to the frustration. At this time, family pressure may be at a high point. Ironically, at a time when support and understanding are most important, the community and its victims tend to withdraw from each other. The emotions of disappointment, grief, and anger which are normally experienced at this time are interpreted by the person having those feelings as abnormal, strange, or a sign of weakness. It is important for disaster victims to seek out and respond to sources of emotional support, whether from family, neighbors, friends, or professionals. People will realize that their feelings are normal once they interact with these important resources. Individual issues can be resolved, thus decreasing any long-term problem that may threaten their well-being.

Phase IV - The Reconstruction Phase

Reconstruction, in the broad sense, can begin as early as when the salvage work is done, and can last several years thereafter. The extent of the disaster (the home, and/or the workplace, and/or the community), and the time involved in reconstruction will prolong healing of the individuals' emotional scars. The victims and community will confront the realization of the rebuilding process.

Reconstruction of the home is fairly straightforward because rebuilding, replacement, and reestablishment of homelife and security is up to the individual. In business, the process becomes a little more complicated because the individual has to look to others to make decisions that will affect their security. A community-wide disaster is very complex because services (natural gas, telephone, electricity, water, and sewer) must be reestablished and new or remodeled construction must replace destroyed or damaged buildings, bridges, and streets. However, community construction and planning allows victims to reaffirm their belief in their own and their community's capabilities.

What does all this mean to you? Well, hopefully, when you are impacted by a disaster, you will better understand what is happening to yourself and those around you. The important thing to remember is that feelings revolving around a disaster, including those of increased disappointment, anger, resentment, and apprehension, are a relatively normal human response to the trauma of such an event. Keep in mind that experiencing these emotions even to a very intense degree is to be expected. You may find your daily life disrupted to a degree that you feel you cannot tolerate for any period, or see this in fellow employees. When this occurs, professional intervention may be advised. Some Federal installations and most county health organizations offer confidential services of this type.

Vacuum Freeze Drying

The Bureau's records consist of a mixture of record materials (coated papers and photographic materials), and water-soluble inks are used on some documents. Bureau records should therefore be vacuum freeze dried rather than vacuum dried to minimize harmful side effects.

Record materials that have been drenched by water must be sharp or blast frozen (below -20°F.) as soon as possible. Freezing at these low temperatures promotes the formation of crystalline, rather than sheet, ice and stabilizes the materials (including water-soluble inks). Freezing also prevents mold growth.

In the vacuum freeze process, the records must remain frozen throughout the drying process. The temperature can be raised up to near the freezing point (32°F) once the drying procedure is started. A vacuum of at least 3 or 4 torr (one torr is 1/760th of a standard atmosphere of 14.7 pounds per square inch at sea level at 32°F) must be maintained in the chamber. Under these conditions, the ice crystals will change from a solid into a gas without having to turn into a liquid in between. This phenomenon is called "Sublimation." Further damage to the records is thus avoided. The water vapor released into the chamber is circulated to pass over condenser coils that are maintained at a lower temperature. At regular intervals, the coils are warmed and the resultant water is drawn from the bottom of the chamber. Periodically during the drying process, a control sample may be weighed to determine water loss.

Once the records are dried, they must be rehumidified before they can be used. When the records are returned to the office, carefully remove any wrapping materials that had been placed around the records at the time of the disaster. Records in boxes must be set out in the air. Arrangements must be made to provide an area where the dried materials can sit for 3 to 4 days or longer. The space should be large enough that books can be set up on edge and slightly fanned open. Bundled documents should not be stacked more than one bundle deep. Microforms (aperture cards, original microfiche, and roll film) must be exposed so air can reach them. Jacketed microfilms require 5 to 6 days for rehumidification. The area requires a constant relative humidity of at least 15 percent. A relative humidity of 40 to 50 percent is most desirable, although at higher elevations, this will not always be possible.

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Recommended Treatment for Photographic Materials

The Eastman Kodak Company of Rochester, New York, has provided the following recommendations for treatment of flood-damaged photographic materials. Circumstances of the disaster may dictate other salvage techniques. Consult with the Preservation Officer. Recovery services have been provided so far by Eastman Laboratories at no charge as long as the photographic materials to be recovered were Kodak Brand.

TREATMENT OF FLOOD-DAMAGED FILM

Eastman Kodak Company, 1985

Introduction

Because the original quality level of processed microfilm cannot be restored by the methods outlined in this procedure, we use the word "restore" to mean that the film is returned to a usable state so that it may fulfill the purpose for which it was primarily intended: the storage and retrieval of information. Its intrinsic quality and appearance, however, will never equal that of undamaged film.

It must be stressed that film restoration is more an art than a science, and that, therefore, the judgment of experienced laboratory personnel is invaluable. Laboratories that are not qualified to restore damaged film because of the lack of experience or proper equipment should ship the film to a laboratory that is equipped to do so.

In all restoration projects, it is important that the customer be aware that complete restoration cannot be guaranteed, and that the restored film will not be of archival quality. Where archival quality is required by the customer, duplicate film prints must be made either before or after restoration, depending upon the nature and extent of the damage.

Make sure, to the best of your knowledge, that the damaged rolls have not been attacked by fungus. If fungus is discovered or even suspected, do not attempt the reclamation treatment described below! Never place fungus-damaged films in water or attempt to treat them with aqueous solutions! The following information includes original roll microfilms in cartridges and cassettes.

Recommended Treatment for Photographic Materials

ROLL MICROFILM

Setting Up

When you are informed that your laboratory will be called upon to perform restoration operations, make immediate arrangements to supply employees with rubber gloves to minimize their direct contact with the materials. Containers of damaged film often come from stricken areas where sanitation has been disrupted, and the water they contain may be contaminated with harmful bacteria and/or harmful chemicals. It is usually possible to obtain disposable medical examination gloves from a local pharmacy or medical supply house. All employees should wash their hands thoroughly, and either wash or dispose of their gloves every time they finish handling the film and containers. If possible, limit the areas in your laboratory where these materials will be transported, stored and handled.

Instruct the customer to prepare the flood-damaged film for shipment in the following manner:

1. Do not remove the film from its cartons. Secure the film in the cartons with rubber bands to prevent separation should the adhesive on the cartons fail.

2. Place the secured cartons of film in clean plastic garbage pails that have tight lids, milk cans, or other suitable containers, and fill them with clean cold water to prevent the film from drying out and becoming fused. Keep film and cartons totally submerged.

In the event that the film cannot be treated immediately, fill the containers with a 1 percent solution of formalin (formalin is a 35 to 40 percent solution of formaldehyde in water) instead of water. This will allow the film to be held for a period of up to two weeks. Clearly mark or label the outside of the containers as to the presence of the formaldehyde solution.

Recommended Treatment for Photographic Materials

CAUTION

The 1 percent formalin solution used to preserve flood-damaged film can cause nausea and dizziness with prolonged use and inhalation. The solution should be used with maximum possible ventilation, and a respirator should be worn. Either of two types of respirator may be used:

a. Respirator, Chemical Cartridge, Comfo - American Optical Number 70553: For protection against light concentration of organic vapors or acid gases up to 0.1 percent volume in air. To be used with Chemical Cartridge - American Optical Number R-563, for protection against dust, mists, acid gases, organic vapors and metal fumes.

b. Mask, Gas, Industrial - MSA Number 84875. To be used with Canister, Gas Mask, GMC for acid and organic vapors - MSA Number 77707.

3. Ship the containers of complete submerged film to the closest qualified reclamation laboratory.

Reclamation Procedure

1. Drain the film containers received from the customer and refill them with clean water at a temperature of 70 to 80°F.

2. If a choice is available, choose a processor with the least number of rollers that will come in contact with the emulsion of the film. Drain, rinse, and then fill all the compartments of the processor with water at a temperature of 70 to 80°F.

3. Remove all wiper blades from the processor except those between the final wash and drying cabinet; the latter must be left in place for the film to dry properly.

4. Replenish the wash tanks with water at the same rate that is usually used in normal film processing. Drain and refill tanks whenever they appear dirty, or at least once daily.

NOTE: If hardening is not necessary, skip to step 5.

Recommended Treatment for Photographic Materials

Hardening (Optional)

If your processor has at least seven wash tanks, you may use a modified reclamation procedure to avoid dumping processing chemicals.

a. Fill the first two wash tanks with water, the second two with stop bath-SB-5a, and the final three with water.

b. Feed the film from a spindle, set up over the processor, directly into the first wash tank.

c. Replenish the middle tanks with SB-5a stop bath at the normal replenishment rate, or in batches of one litre per 400 feet of 16mm film.

Formula for SB-5a Stop Bath

Water at 80°F	500 millilitres
Acetic Acid, Glacial	18 millilitres*
Sodium Sulfate, Anhydrous	45 grams
Water to make	1 litre

* 64 millilitres of 28 percent acetic acid may be substituted.

5. Transfer the submerged film, one roll at a time, from the containers to a small sink or clean container where it can be prespliced onto 1000-foot reels. Wind a maximum of 900 feet of film onto each reel, as the film is being rinsed under a continuous flow of running tap water at 70 to 80°F. Use a soft, wet viscose sponge to clean the first two feet or so of each roll as it is wound onto the reel to remove any accumulated mud. Processors such as the Prostar are not designed for large reels of film so individual spools of film will have to be run through. On machines so equipped, two rolls of 16mm film can be run at one time. It will be necessary to use a threading leader each time.

6. Keep the cartons corresponding to the rolls of film on each reel together and in correct sequence, so that they can be matched up with the individual rolls of film after the treatment has been completed. Flatten the cartons and allow them to dry. They may be spread on blotters or newspapers on a flat surface and be allowed to air dry, or be blow-dried, or be dried in the bottom of the processor dryer.

7. Run the film through the prepared processor.

Recommended Treatment for Photographic Materials

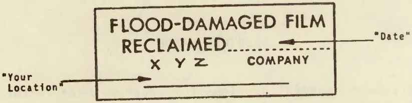
8. If present, residue can sometimes be removed from the film by adding a 5 percent solution of ammonium hydroxide (50 millilitres of aqueous ammonia to 1 litre of water) to the wash tank immediately preceding the stop bath tanks (if used).

Proving Up

After the rolls of film have been completely treated and dried, they must be placed in new cartons and paired with the original cartons. Each original carton must be attached to the corresponding new one so that the customer can transfer all the important data from the old to the new carton when the film is returned to him. It should be understood by the customer that some cartons will have partially disintegrated or that the information on them will have become obliterated.

Identification of Flood-Damaged Film

Because the quality of flood-damaged film remains below that of undamaged film even though it receives the treatment described above, it is necessary to identify flood-damaged film after treatment. This is done by stamping an identification marking on the new film cartons in which the film is returned to the customer. Below is an illustration of the suggested rubber stamp for this purpose. It can be obtained at any office supply or stationery store. The actual stamp can be as large or small as required.



Fused Film

When films are wetted and then allowed to dry out in rolled or stacked form, the emulsion side of one convolution or layer usually becomes fused to the base side of the next. This type of damage is extremely difficult to overcome. The customer should be advised to expect information losses caused by emulsion peeling, and perhaps a failure of the reclamation attempt.

1. Make sure, to the best of your knowledge, that the damaged rolls have not been attacked by fungus. If fungus is discovered or suspected, do not attempt the reclamation treatment described above! Never place fungus-damaged film in water or in aqueous solutions!

2. Place the fused film in a suitable container filled with cool, fresh water to which one part Kodak Photo-Flo solution has been added for every 200 parts of water.

Recommended Treatment for Photographic Materials

3. After 48 hours, remove the film from the water, one roll or block at a time, and attempt to unwind or separate it. If in roll form, wind it slowly and loosely onto take-up reels. If the emulsion begins to peel, try to minimize loss by very slowly and gently manually separating the fused portions.

4. If loss cannot be avoided or minimized, stop the operation and return the roll of film to the soaking solution for another 24 hours. Attempt to repeat step 3. If this fails, inform the customer that the restoration attempt has been unsuccessful.

5. When rolls of film have been successfully unfused, run the rewound rolls, one at a time, without presplicing, through the reclamation process described above.

Microforms, other than the roll format, cannot be economically recovered en masse as described in the proceeding text. However, the recovery method of vacuum freeze drying offers the technique that voids the necessity of dissassembly of individual microforms (aperture cards, jacketed microfilms, etc.) and retains the integrity of the data. The vacuum freeze drying technique of photographic materials is discussed in Eastman Kodak's publication No. F-40, catalog No. 193 5725 "Conservation of Photographs."

APERTURE CARDS

Aperture cards present special problems for recovery because they contain more than just the information film chip. About 90 percent of the card is paper that contains the eye-readable title and any additional written data that has been added to the documentation.

The aperture card as used by the Bureau is not, in most cases, an archival copy, but a working copy. Recovery of these records from a disaster can be far less expensive than refilming when one considers the times that the office will be without power, along with the time required to rebuild or replace the camera (if damaged), to recall the original documents from storage, and to film and type a complete set of cards. In addition, information that has been manually added to damaged cards is lost if they are disposed of.

Recommended Treatment for Photographic Materials

Water causes the paper portion of aperture cards to swell, which wedges the cards between the end of the tray and follower. This pressure, card to card, prohibits the filth carried by invading waters from reaching the surfaces of the cards, although water will still penetrate throughout because of capillary action. In most cases, water found on the film will be from condensation rather than penetration. Where water has penetrated, there may be some stains left on the film after the drying process is completed. These stains, if they interfere with the image, can be removed later by using a cotton ball moistened in Kodak or other similar film cleaner.

A unique feature of the aperture card is that the thickness of the card and mounting provides a thin protective space between each film chip while they are in the file. In a water disaster, the film chip usually receives little damage.

Because of the ever-present potential for a disaster, aperture card trays should never be completely filled. Enough room should be left so the follower in the tray can be released. The follower should always be left tight against the cards when they are not in use.

When trays with water-soaked cards are removed from the disaster area, begin treatment by draining and wiping any water left in or on the metal trays. Do not release the tray follower at this time! Carefully remove as much silt as possible (if any) from the tops of the cards using a stiff brush (2 to 3 inches wide). Brush along (not across) the tops of the cards. At the end of each stroke, catch the mud deposit on a paper towel. If tap water is available, turn the tray upside down and using a flexible piece of hose, run a gentle stream of cold water against the tops of the cards. Once the tops of the cards are cleaned of silt, use clean, dry paper towels to gently pat (don't rub) the surface to absorb any free water. At this point, the tray follower can be released. Because of the pressure caused by the swollen cards, it may be necessary to hold a blunt punch or steel bar against the top of the follower release lever and tap it with a hammer. There have been instances where the cards were held so tight that they had to be carefully wedged out of the tray with a wrecking bar because the follower could not be released.

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Recommended Treatment for Photographic Materials

Once the pressure is released, the extent of water penetration can be determined (see Appendix 4). The condition of the paper will dictate which drying technique will be used. Wet and the more moist cards should be sharp frozen and then vacuum freeze dried. Slightly moist cards and those that can be classed as damp can be air dried if they are promptly attended to before any mold can form. The number of damaged cards will also have a bearing on whether they will be air or freeze dried. Cards that are to be sharp or blast frozen can remain in the metal trays. Keep in mind that when water freezes, it expands. Therefore, leave a space of about one eighth inch (1/8") in each tray between the follower and the cards to allow for this expansion. Extreme care will have to be taken to move and transport these records to the freezing facility so they will not be damaged. Note also, that most of these trays are not designed to be stacked. Divider boards (1/8" or 3/16" plywood) can be cut slightly longer than the length of a tray and wide enough to cover an area three trays wide. This will allow you to form a stabilized stack and not take up a lot of floor or shelf space in the freezing facility. Each layer of trays should be covered (not wrapped) with a layer of waxed paper.

During the time that these records are out of the storage area, work crews are to clean, sanitize, and dry the cabinet shelves and floor so the room will be ready to receive the dried records, unless a new storeroom is to be prepared. Before the cards are returned to storage, they should be inspected for damage to the filmed image as to the working area, and particular attention should be paid to whether the film chip is still adhering to the card. If the adhesive has failed (and this will happen sometimes), it is best to replace these cards. The vendor who supplies the cartridges (aperture cards with unexposed film chips) should also be able to supply packages of aperture cards that have a plasticized paper chip instead of having a film chip in the aperture. Transfer the handwritten information from the damaged card to the new card, proofread it, and then mount the film chip. The film chip is correctly mounted if, when viewed from the face side of the card, it is right reading (i.e., reads left-to-right) and is right side up. The emulsion side of the film will be to the back side of the card.

When handling the film chips, wear film-handling gloves. All water-damaged aperture cards, whether air or vacuum freeze dried, will have to be monitored for development of mold for at least a year after they are returned to the shelves.

Recommended Treatment for Photographic Materials

JACKETED MICROFICHE

The complexity of jacketed microfiche, with its single film chips and additions, requires the use of vacuum freeze dry techniques. Even the decision to salvage is complex because reconstructing from the silver halide security rolls is expensive and time-consuming. The problem of reconstruction from diazo duplicate copies in the Field is that many of the copies are marginal as far as reproduction quality is concerned.

If the decision is made to salvage, recovery action should begin as soon as possible. If the follower in the microfilm tray has been pushed tight against the jackets, the initial salvage is relatively simple. Do not release the pressure on the follower at this time. Trays of microfiche that have deposits on them left by flooding can be rinsed under a gentle stream of cold water.

In a 5-gallon plastic garbage can, prepare enough of a formaldehyde solution so that the fiche trays will barely be submerged when stood on end.

CAUTION: the use of formaldehyde requires protective measures for workers--rubber gloves, protective aprons, eye protection, and respirators if the work area is confined or if there is poor ventilation.

To each gallon of cold water used, add 2 1/4 fluid ounces of 35 percent formaldehyde. Dip each tray into the solution for approximately two minutes. The formaldehyde acts as a hardener on the gelatin layer of the film and also kills bacteria and mold. If the solution becomes murky, replace it with a fresh mixture. As each tray is removed from the bath, allow it to drain. Rinse again in gentle, cold running water, allow to drain, and wipe any beaded water from on or in the trays. Move these trays to a freezing facility as soon as possible.

The jacketed microfiche may be sharp or blast frozen while still in the trays. To allow for expansion of any water within the jackets when freezing occurs, loosen the follower enough to provide at least 1/16" of space. Stack the trays on 1/8" or 3/16" plywood sheets that have been cut about one inch longer than the length of the tray and wide enough to cover three trays sitting side by side. Waxed paper should be used to cover the jackets before the next plywood sheet is set in place. The jacketed microfilm must remain frozen through the vacuum drying process.

Five to six days should be allowed for rehumidification as the plastic jackets will not allow moisture to reach the film directly.

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Policy for Use of Respirators

The daily use of respirators in the work place is not required of most BLM employees. However, if a disaster occurs, respirators might have to be used. The following policies for purchasing respirators, training personnel, and using respirators in conjunction with disaster recovery and records preservation shall be followed. This policy applies to disaster recovery and preservation work only; it does not apply to other work situations where respirators are required.

Policy

1. The standard operating procedures given below follow the guidelines and regulations set forth by the Code of Federal Regulations (CFR), National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), Mine Safety and Health Administration (MSHA), and Environmental Protection Administration (EPA).

    a. Respirators shall be of the disposable type. Half-mask particulate respirators are not to be used.

    b. Respirators in factory packages shall remain sealed until they are placed in use. At the time of use, they are to be tested before workers are exposed to the contaminated environment. Once in use, respirators are to be monitored by a trained supervisor for proper fit, functioning, and use. Respirators shall be replaced whenever necessary.

    c. Packaged respirators shall be visually inspected once every 6 months. If any deterioration is noted either in the packaging or face seal, the unit shall be replaced. The suspect unit may be used as a demonstration unit in a nonvapor/mist atmosphere before it is disposed of.

    d. The person designated to issue respirators shall also be responsible for monitoring the destruction of each unit.

    e. All nonfunctioning, used, and/or contaminated units shall be rendered completely unusable upon disposal. The head straps shall be cut or removed and the cartridge broken.

    f. All units shall be stored under clean and sanitary conditions in a convenient location.

    g. All offices shall have no less than three persons trained in the use of respirators who are certified to train other employees in the proper fitting and use of the units in the event of a disaster. Trained persons shall review respirator use and recertify their compliance on a yearly basis.

Policy for Use of Respirators

h. If it requires an excessive amount of time for personnel to travel between the disaster cache and the office, then respirators, aprons, protective gloves, and overshoes can be issued to core team members and/or key disaster recovery personnel for home storage.

i. When enlisting people to help with disaster recovery, supervisors shall consider employees' present state of health and the nature/difficulty of the work required. Unfit or untrained individuals shall not be allowed to work in recovery situations where respirators are required.

j. Employees found not wearing respirators when the situation calls for their use shall be subject to penalties ranging from two weeks' suspension without pay up to the possibility of being fired.

k. Respirators not discarded after one shift use shall be labeled with the employee's (user's) name. Employees are responsible for off-shift storage of their respirators in a clean and secure environment and for returning the unit for their next shift.

2. Normally, in either a recovery or preservation situation, the work environment will require, at a minimum, the protection afforded by NIOSH/MSHA approved requirement number TC-23C-123 respirators (Organic Vapor), with many situations also requiring the Dust/Mist protection available as an add-on device. Dust/Mist protection is required when using the NIOSH/MSHA respirator requirement number TC-23C-372 for handling formaldehyde. Managers shall pre-assess the work area to determine if there is a need for other types of respirators and if so, shall provide them.